No. 95-728-CFX Title: Warner-Jenkinson Company, Inc., Petitioner v.

Hilton Davis Chemical Co.

Docketed: Court: United States Court of Appeals for the Federal Circuit

Entry Date Proceedings and Orders

Nov	6	1995	Petition for writ of certiorari filed. (Response due December 6, 1995)
Dec	6	1995	Brief amicus curiae of American Intellectual Property Law Association filed.
Dec	6	1995	Brief of respondent Hilton Davis Chemical Co. in opposition filed.
Dec	8	1995	Brief amici curiae of Seagate Technology, Inc., et al. filed.
Dec	19	1995	Reply brief of petitioner filed.
		1995	Supplemental brief of respondent filed.
		1995	DISTRIBUTED. January 12, 1996
		1996	REDISTRIBUTED. January 19, 1996
		1996	REDISTRIBUTED. February 16, 1996
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		1996	Petition GRANTED.
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Apr	10	1996	
pr	20	1000	Brief amicus curiae of Information Technology Industry Council, et al. filed.
Anr	11	1996	Joint appendix filed.
		1996	Brief of notitioner Warner Jankinson Communication
		1996	Brief of petitioner Warner-Jenkinson Company, Inc. filed.
			Brief amicus curiae of American Automobile Manufacturers Association filed.
Apr	11	1996	Brief amicus curiae of American Intellectual Property Law
			Association filed.
Apr	11	1996	Brief amicus curiae of MCI Telecommunications Corporation filed.
Apr	11	1996	Brief amicus curiae of GHZ Equipment Company filed.
		1996	Brief amicus curiae of Intellectual Property Owners filed.
		1996	Brief amicus curiae of Micron Separations, Inc. filed.
		1996	Brief amici curiae of Seagate Technology, Inc., et al. filed.
Apr	11	1996	Brief amicus curiae of United States filed.
		1996	Brief amicus curiae of Gateway Technologies, Inc. filed.
		1996	LODGING, consisting of two looseleaf binders containing
			the Manual of Patent Examining Procedure and
			Appendices, and one copy of a pamphlet titled General
			Information Concerning Patents subsitted by the
			Information Concerning Patents, submitted by the Solicitor General.
May	13	1996	
		1996	Brief of respondent Hilton Davis Chemical Company filed.
ay	13	2330	Brief amicus curiae of Chemical Manufacturers Association filed.
May	13	1996	Brief amicus curiae of Ohio State Bar Association filed.
		1996	Brief amicus curiae of Biotechnology Industry Organization filed.
May	13	1996	Brief amicus curiae of Licensing Executive Society (U.S.A.

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# Proceedings and Orders

			and Canada) filed.
May	13	1996	Brief amicus curiae of Litton Systems, Inc. filed.
May	13	1996	Brief amicus curiae of Chiron Corporation filed.
May	13	1996	Brief amicus curiae of Dallas-Fort Worth Intellectual
			Property Law Association filed.
May	14	1996	Motion of the Solicitor General for leave to participate
			in oral argument as amicus curiae and for divided
			argument filed.
May	28	1996	Motion of the Solicitor General for leave to participate
			in oral argument as amicus curiae and for divided
			argument GRANTED. to be divided as follows: 25 minutes -
			petitioner; 25 minutes - respondent; 10 minutes -
			Solicitor General.
		1996	Reply brief of petitioner filed.
		1996	Record filed.
-		1996	CIRCULATED.
Oct	15	1996	ARGUED.
Oct	16	1996	Record filed.

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No. 95 OFFICE OF THE CLERK

# Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co.,

Respondent.

Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

# PETITION FOR A WRIT OF CERTIORARI

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# QUESTION PRESENTED

Whether patent infringement exists whenever the accused product or process is "equivalent" to the invention claimed in the patent, in that the differences are not "substantial" as determined by a jury, even though the accused product or process is outside the literal scope of the patent claim.

# TABLE OF CONTENTS

		Pag
QUES	STION PRESENTED	
TABI	LE OF AUTHORITIES	i
OPIN	IONS BELOW	
JURI	SDICTION	
STAT	CUTORY PROVISIONS INVOLVED	
STAT	PEMENT	
REAS	SONS FOR GRANTING THE PETITION	1
I.	THE CASE PRESENTS A FUNDAMENTAL QUESTION OF PATENT LAW THAT THIS COURT SHOULD RESOLVE	1
II.	THE DECISION OF THE COURT OF AP- PEALS IS SERIOUSLY FLAWED ON THE MERITS	2
CONC	CLUSION	3

#### v

§ 251 § 252	
§ 252	passim
	12, 15, 26
§ 271	passim
Other Materials	
<ul> <li>M. Adelman, G. Francione, The Doctrine of Equilents in Patent Law: Questions That Penns Did Not Answer, 137 U. Pa. L. Rev. 673 (198 R. Bajefsky, Patent Equivalency: The Jury Is In, Legal Times, Sept. 4, 1995, at 28</li> </ul>	walt 39)passim Still
W. Rooklidge, Federal Circuit Unsettles Doct of Equivalents, National Law Journal, Oct.	rine

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WARNER-JENKINSON COMPANY, INC.,
Petitioner,

HILTON DAVIS CHEMICAL CO.,

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Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

# PETITION FOR A WRIT OF CERTIORARI

Petitioner Warner-Jenkinson Company, Inc., hereby petitions this Court to review the judgment of the United States Court of Appeals for the Federal Circuit in this case. Sitting en banc and producing five opinions, the charply divided court resolved one of the fundamental questions of patent law: to what extent, if any, may infringement be proved under the "doctrine of equivalents," where "literal" infringement cannot be proved because the defendant's product or process does not come within the plaintiff's patent claim? The court, repeatedly invoking precedent of this Court dating from prior to the 1952 Patent Act, adopted the broad view that a patentee al-

<sup>&</sup>lt;sup>1</sup> Pursuant to Rule 29.1 of the Rules of this Court, Warner-Jenkinson states that it is a wholly owned subsidiary of Universal Foods Corporation and that it has no subsidiaries other than wholly-owned ones.

3

ways may resort to two different causes of action for infringement—one based on the patent claim's literal coverage of the accused product or process; the other based on the lack of "substantial differences," as found by a jury, between the patented invention and the accused product or process.

#### OPINIONS BELOW

The opinions of the court of appeals sitting en banc (Pet. App. 1a-152a) are reported at 62 F.3d 1512. The unpublished panel opinion of the court of appeals on other issues (Pet. App. 153a-159a) is not reported. The district court's oral opinion on relevant aspects of post-judgment motions (Pet. App. 160a-167a) is not reported.

#### JURISDICTION

The court of appeals entered judgment on August 8, 1995. Pet. App. 1a, 153a. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254.

### STATUTORY PROVISIONS INVOLVED

35 U.S.C. § 111 provides in pertinent part:

Application for patent shall be made, or authorized to be made, by the inventor, except as otherwise provided in this title, in writing to the Commissioner. Such application shall include (1) a specification as prescribed by section 112 of this title.....

35 U.S.C. § 112 provides in pertinent part:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

# 35 U.S.C. § 251 provides in pertinent part:

Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee
claiming more or less than he had a right to claim
in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee
required by law, reissue the patent for the invention
disclosed in the original patent, and in accordance
with a new and amended application, for the unexpired part of the term of the original patent. No
new matter shall be introduced into the application
for reissue.

No reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent.

# 35 U.S.C. § 271 provides in pertinent part:

(a) Except as otherwise provided in this title, whoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.

#### STATEMENT

1. This case arises out of separate, independent efforts by petitioner and respondent to develop an improved process, known as ultrafiltration, for removing impurities from certain dyes. Both petitioner and respondent manufacture food dyes, including FD&C Red Dye #40 and Yellow Dye #6. "Historically, [petitioner and respondent] used an expensive and wasteful process known as 'salting out' to purify the dyes." Pet. App. 2a. Ultrafiltration—which "uses osmosis to separate components of a solution by drawing some of the components, but not others, through a membrane" (Pet. App. 2a-3a)—produces a dye of high purity at less cost and with less loss of the dye itself.

It is undisputed in this case that petitioner and respondent developed their respective ultrafiltration processes on parallel tracks. Both of these tracks involved dealings with a company called Osmonics, Inc.<sup>2</sup> Having been approached by the companies, Osmonics selected certain membranes to be tested and specified the process conditions for those tests—i.e., pH, pressure, and membrane pore size—first for petitioner and later for respondent. After Osmonics demonstrated to both companies that it had succeeded in performing ultrafiltration on their food dyes, respondent (unbeknownst to either Osmonics or petitioner) sought to obtain a patent for the process.

Respondent's initial efforts to obtain a patent met with rejection at the U.S. Patent and Trademark Office (PTO). In October 1984, a PTO Examiner concluded that, given the prior art disclosed in the "Booth patent," the process claimed by respondent was obvious. C.A. Jt. App. 2209.

A second application was likewise rejected on grounds of obviousness. *Id.* at 2145-47.

Respondent then met, through its patent agent, with the PTO Examiner, asserting that its claimed process differed in four important respects from the process disclosed in the Booth patent. Of particular importance here, it argued that, while the Booth process operated at a pH level above 9 (see note 3, supra), its process operated at a pH level between 6 and 9. According to the Examiner Interview Summary Record, "[t]he Examiner stated that if claim 1 were amended to contain the pH range of 6 to 9, the rejection on prior art would be overcome." C.A. Jt. App. 2149. Respondent amended its claim to call for "a pH from approximately 6.0 to 9.0," as well as "hydrostatic pressure of approximately 200 to 400 p.s.i.g." See Pet. App. 4a.4 As a result, the patent-U.S. Patent No. 4,560,746 (the '746 patent)—issued in December 1985. See Pet. App. 3a.

The process developed by Osmonics for petitioner does not fall within the ranges specified in the '746 patent. To the contrary, it is conceded that its process operates at a pH of 5 (and at hydrostatic pressure of nearly 500 p.s.i.g. at the upstream side of the membrane). It is also conceded that, at the time that petitioner began commercial use of its ultrafiltration process for Red Dye #40, it had no knowledge of the '746 patent, which had just

<sup>&</sup>lt;sup>2</sup> Osmonics, Inc. "was known to specialize in the development of membranes and equipment for fluid purification by ultrafiltration." Pet. App. 85a (Nies, J., dissenting).

<sup>&</sup>lt;sup>3</sup> The Booth patent also disclosed an ultrafiltration process. That process, however, "operates at a pH above 9 and preferably between 11 and 13." Pet. App. 4a; id. at 156a. Because pH is a logarithmic

scale, a single pH unit represents a tenfold difference in hydrogen ion concentration. See Pet. App. 62a (Plager, J., dissenting).

<sup>&</sup>lt;sup>4</sup> Dr. Cook, a co-inventor of the process claimed in the '746 patent, "testified at trial that though the process would work to separate the dye from the impurities at pH-values as low as 2.0, a solution with a pH below 6.0 would cause 'tremendous foaming problems in the plant.'" Pet. App. 62a (Plager, J., dissenting).

<sup>&</sup>lt;sup>5</sup> The process used by petitioner—which utilized a pH of 5.0 for the purpose of decomposing a triazene impurity—employed a different chemistry, making it able to operate at a pH below 6.0 without causing the foaming problems noted by Dr. Cook. See note 4, supra.

issued, or of the process used by respondent. Pet. App. 5a.

Petitioner learned of the '746 patent in October 1986. It then consulted with patent counsel, who advised that the patent was invalid and that, in any event, it was not infringed by petitioner's process. In particular, counsel stated the opinion that the process—operating, as it did, outside the ranges specified in the '746 patent—did not literally infringe the '746 patent and could not be deemed to infringe under the doctrine of equivalents. Pet. App. 87a (Nies, J., dissenting).

2. Respondent brought suit against petitioner in 1991, alleging that petitioner had infringed the '746 patent. Although it claimed at first that the process developed by petitioner literally infringed the patent, it expressly disavowed this argument before the district court. C.A. Jt. App. 668 ("we are not asserting literal infringement in this case"). It continued to press arguments, however, that petitioner's process infringed the patent under the doctrine of equivalents, as set forth in Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), and other decisions. That issue was submitted to a jury, which found infringement (but not willful infringement). It awarded damages of \$3,564,705. See Pet. App. 5a, 167a, 168a.

The district court subsequently denied a motion by petitioner for judgment as a matter of law. Even though the '746 patent had been modified before the PTO to recite a process utilizing "a pH of approximately 6.0 to 9.0," and even though petitioner's process utilized a pH outside that range, the court nevertheless held that the jury had sufficient evidence to conclude that the monopoly granted by the '746 patent extended, under the doctrine of equivalents, beyond the terms of its claims. Pet. App. 165a. As a result, in addition to the award of damages, it issued an injunction barring petitioner from employing its process with any pH below 9.01 (and any pressures below 500 p.s.i.g.). Pet. App. 172a.

3. The Federal Circuit, sitting en banc, affirmed by a closely divided vote—6 active judges plus one senior judge in the majority; 5 active judges in dissent. (Judge Bryson did not participate.) The issues of validity and infringement were initially argued to a panel of that court, but, before it rendered a decision, the court decided to rehear the issues of infringement en banc, in order to consider the important issues raised concerning the doctrine of equivalents." Pet. App. 5a. Its efforts to resolve those issues produced wide disagreement, reflected in five separate opinions.

The majority began by broadly declaring its allegiance to the doctrine of equivalents, stating flatly that "[t]his case presents an opportunity to restate—not to revise—the test for infringement under the doctrine of equivalents." Pet. App. 6a. Observing that this Court had "mapped the modern contours of the doctrine of equivalents in its landmark *Graver Tank* decision" (Pet. App. 7a), the court concluded that the doctrine gave a patent

<sup>&</sup>lt;sup>6</sup> The issue of validity later was assigned to the same panel, which held that the '746 patent was valid. Pet. App. 154a-159a. But see Pet. App. 90a-102a (Nies, J., dissenting). Petitioner is not seeking review of that ruling.

<sup>&</sup>lt;sup>7</sup> The court of appeals sought briefing on three specific questions:

<sup>1.</sup> Does a finding of infringement under the doctrine of equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, (c) result, the so-called triple identity test of Graver Tank [& Manufacturing Co.] v. Linde Air Products Co., 339 U.S. 605 (1950), and cases relied on therein? If yes, what?

<sup>2.</sup> Is the issue of infringement under the doctrine of equivalents an equitable remedy to be decided by the court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case?

<sup>3.</sup> Is application of the doctrine of equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of the claim, discretionary in accordance with the circumstances of the case?

holder the right to establish infringement whenever a jury determined that the differences between an accused product and the product claimed in the patent were "insubstantial." See Pet. App. 8a; id. at 9a ("this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard"). The court continued to endorse reliance on the familiar "function-way-result" test (Pet. App. 9a) but cautioned that "the function-way-result test may not invariably suffice to show the substantiality of the differences." Pet. App. 10a.8

The majority further held, again relying on Graver Tank, that "preventing 'fraud on a patent' involves an objective assessment of the substantiality of the differences between the claimed and accused products or processes." Pet. App. 12a (emphasis added). It thus determined that the district court had "correctly resisted [petitioner's] effort to erect an equitable threshold for application of the doctrine of equivalents." Pet. App. 20a. According to the court, evidence of "copying" or "designing around" is relevant to determining the substantiality of differences, but evidence of independent development is not. See Pet. App. 11a-14a; id. at 13a ("[e]vidence that the accused infringer developed its product or process through independent research is not directly relevant to the question of infringement under the doctrine of equivalents"). As

a result, "those who make only insubstantial changes to a patented product or process are liable for infringement, regardless of their awareness of the patent and its disclosure." Pet. App. 14a.<sup>10</sup>

The court acknowledged that respondent had narrowed its patent claims in order to win approval from the PTO, but held that respondent nevertheless could use the doctrine of equivalents to bar products falling within the surrendered area. To the court, the important issue was not what was surrendered but the reason for the surrender. See Pet. App. 24a-25a. Thus, while respondent had explicitly limited its claimed process to recite "a pH from approximately 6.0 to 9.0," the court concluded that a process utilizing a pH of 5.0 was infringing because respondent had amended its claim "to avoid the disclosure in the Booth patent of an ultrafiltration process operating at a pH higher than 9." Pet. App. 24a; see also ibid. ("[t]his amendment surrendered pHs above 9, but does not bar [respondent] from asserting equivalency to processes . . . operating sometimes at a pH below 6").

The remainder of the majority opinion was devoted largely to addressing, and rejecting, arguments made by the three dissents. In particular, the majority dismissed the notion that widespread resort to the doctrine of equivalents was fundamentally inconsistent with the specific claiming requirements of the Patent Act itself. In dissent, Judge Plager, noting that the doctrine of equivalents "is regularly used by patentees to seek greater coverage for their patents than the patent statute grants" (Pet. App. 53a), argued that, as defined by the majority, the doctrine

<sup>&</sup>lt;sup>8</sup> This Court in *Graver Tank* stated that "a patentee may invoke [the doctrine of equivalents] to proceed against the producer of a device "if it performs substantially the same function in substantially the same way to obtain the same result." 339 U.S. at 608 (quoting *Sanitary Refrigerator Co. v. Winters*, 280 U.S. 30, 42 (1929), in turn quoting *Machine Co. v. Murphy*, 97 U.S. (7 Otto) 120, 125 (1878)).

The majority stated that "[w]hen an attempt to copy occurs, the fact-finder may infer that the copyist, presumably one of some skill in the art, has made a fair copy, with only insubstantial changes." Pet. App. 11a. By contrast, it said, "[w]hen a competitor becomes aware of a patent, and attempts to design around its claims,

the fact-finder may infer that the competitor, presumably one of skill in the art, has designed substantial changes into the product to avoid infringement." Pet. App. 13a.

albeit one in which the substantiality of differences apparently may turn upon the intent of the alleged infringer (see note 9, supra)—enabled it to conclude that application of the doctrine of equivalents was a matter for a jury, not the court. See Pet. App. 14a-18a.

"is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose." Pet. App. 55a. Judge Plager objected that this expansion of the patented area "is done largely without regard to and independent of the express limitations of the patent claims which may have brought about their allowance by the [PTO] in the first place." Pet. App. 55a. Even though Judge Plager accepted the need for some equitable remedy to prevent virtual duplication—a remedy lying within the discretion of the court—he found no basis for a doctrine broad enough to rescue patent holders from the failure to claim all that they lawfully might have claimed, stating that "[t]he solution to the problem of inadequate or incomplete claim drafting is not arbitrary after-the-fact 'interpretation' under the guise of 'equivalents,' whether by judge or jury, that goes beyond anything in the claims themselves." Pet. App. 62a.

The majority, continuing to rely heavily on Graver Tank, disagreed. "According to Graver Tank, the 'theory on which [the doctrine of equivalents] is founded is that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape.'" Pet. App. 26a (quoting Graver Tank, 339 U.S. at 608 (internal quotes omitted) (emphasis added by Federal Circuit). For that reason, the court concluded, the doctrine of equivalents is "quite consistent with the requirement that the patent claim 'particularly point out' and thereby circumscribe the protected invention." Pet. App. 26a-27a. Rejecting the idea that changes in the Patent Act of 1952 had narrowed judicial authority to go beyond the express terms of a patent, the court stated that, "[i]n light of [Supreme Court] authority," 11 there was "no basis to hold that the doctrine of equivalents was rendered extrastatutory and thus equitable by virtue of the silent repeal that the dissent finds in the Patent Act of 1952." Pet. App. 28a.

The court also found no ground for concluding that, once a factual determination of insubstantiality had been made, the doctrine of equivalents turned in any way on the intent of the accused infringer. In dissent, Judge Lourie took a contrary position, stating that "the substantiality of the differences [between the patented and accused processes] is still only one of the factors according to Graver, arguably the most important factor, which a court should consider in deciding whether to apply the [doctrine of equivalents]." Pet. App. 74a.12 Noting that "[t]he whole purpose of the doctrine is to defeat piracy and to do justice to a patentee" (Pet. App. 77a), Judge Lourie said that "[i]ntent to misappropriate someone else's invention is the hallmark of a pirate, and intent must therefore not be excluded if a suitable judgment is to be made concerning the applicability of the [doctrine of equivalents]." Pet. App. 77a. The majority, however, found no merit in this theory: "The Supreme Court, in our view, made the fundamental question 'whether under the circumstances the change [in the accused product or process] was so insubstantial that . . . invocation of the doctrine of equivalents [is] justified." Pet. App. 29a (quoting Graver Tank, 339 U.S. at 610). The court thus concluded that "filefringement is, and should remain, a strict liability offense." Pet. App. 29a.

The court of appeals stated that "[a]gainst [a] stable backdrop of statutory definitions of infringement, definitions which are virtually indistinguishable from the current 35 U.S.C. § 271(a), the Supreme Court has recognized actions at law for recovery for infringement under the doctrine of equivalents since its Winans

v. Denmead decision [56 U.S. (15 How.) 330] in 1854." Pet. App. 28a.

<sup>12</sup> Judge Lourie mentioned several other factors to be considered, including "whether independent development or copying has occurred." Pet. App. 74a. He also noted "any behavior of the patentee that impairs the ability of the public to reasonably understand from the claims what is patented" (Pet. App. 74a-75a) and "the failure of the patentee to seek reissue of the patent to cover such embodiment if it knew of the potential infringement during the permissible statutory time period" (Pet. App. 75a).

Finally, the court rejected a number of arguments made by Judge Nies in dissent, including the argument that respondent could not reclaim under the doctrine of equivalents what it had expressly surrendered before the PTO. Judge Nies pointed out that, "[i]n view of the liberality in current claiming practice, the need for the doctrine of equivalents because of difficulties in grafting claims to cover an invention in all possible forms is a rare case." Pet. App. 103a. Given that the decision by petitioner to claim a process involving "a pH from approximately 6.0 to 9.0" was made in order to secure approval from the PTO (Pet. App. 4a), Judge Nies reasoned that, "[h]aving narrowed the claim's range of pH to secure the Examiner's withdrawal of his prior rejection, [respondent] may not now resort to the doctrine to cover equivalents thereof." Pet. App. 151a. But the court-looking to "the reasons for claim amendments during prosecution" (Pet. App. 32a), rather than to the terms of the amendments on their face-held that respondent still could invoke the doctrine of equivalents, notwithstanding the restrictions in the claim itself. Pet. App. 31a-32a.

A concurring opinion by Judge Newman expressed considerable doubt about the doctrine of equivalents, but found that "any change in the legal and factual fundamentals so explicitly laid out by the Supreme Court is beyond our judicial authority." Pet. App. 33a. Judge

Lourie expressed a similar view, stating that, "in light of Graver, it may be that only the Supreme Court, writing without the confining strictures of Graver, can deal cleanly with this issue." Pet. App. 79a n.3. And, in his dissenting opinion, Judge Plager expressed regret that the Federal Circuit had failed to address more squarely the widespread problems raised by the doctrine of equivalents, observing that "[w]e and the Supreme Court are the only two appellate courts with authority to do this." Pet. App. 56a. In his view, the inability of the Federal Circuit to deal with the issue "leav[es] to the Supreme Court the obligation of attending to the problem if it is to be attended to at all." Ibid.

## REASONS FOR GRANTING THE PETITION

A sharply divided en banc Federal Circuit decided one of the fundamental questions of patent law in this case: the scope of patent law's protection against "infringement." See 35 U.S.C. § 271(a). The court held that the Patent Act precludes a defendant's unauthorized making, using, or selling of its product or process either if it comes within the terms of the plaintiff's patent claim or if, though outside the patent claim, it is found by a jury to lack a "substantial difference" with the patented product or process. Under the court's ruling, proof of infringement through the "doctrine of equivalents" is a broadranging and generally applicable supplement to proof of "literal" infringement: it is freely available to any patentee as a second theory of infringement when proof of literal infringement fails.

This ruling warrants review, first of all, because of its elemental importance to patent law and patent litigation. No question can be more basic, or more common, than the scope of protection against infringement: that is, whether infringement is tied to the patent claim that gives the world notice of the legally protected monopoly; or whether it extends more broadly to all products or processes that a jury may later determine to be "substan-

<sup>&</sup>lt;sup>13</sup> Judge Nies also pointed out that a patentee could resort to a statutory reissue procedure (35 U.S.C. §§ 251, 252) in order to gain protection beyond the terms of the original patent. Because the statutory procedure allows competitors to invoke "intervening rights," however, Judge Nies noted that "[t]he patentee is much better off evading the reissue procedure which Congress had provided, and resorting to its counterpart, the doctrine of equivalents, created out of the judiciary's sense of 'fairness.' " Pet. App. 103a-104a.

<sup>&</sup>lt;sup>14</sup> Judge Newman found that "the court's decision today provides no more certainty than did the 1950 decision in *Graver Tank*, leaving in place the problems of application of the doctrine that have concerned this court." Pet. App. 45a.

tially equivalent." The Federal Circuit's adoption of the latter broad view leads to obvious uncertainty and complication both for inventors seeking to comply with the patent laws and for litigants in patent disputes. Before such a view becomes the definitive law of the land, this Court should fully and freshly consider whether, with its evident and substantial costs, the Federal Circuit's expansive doctrine of equivalents is truly compatible with the 1952 Patent Act. That is particularly so because the Federal Circuit, finding the "modern contours" of the doctrine to be dictated by precedent of this Court predating the 1952 Act (see Pet. App. 7a), plainly did not undertake such a complete examination of this fundamental issue.

Review is warranted, in addition, because the ruling of the Federal Circuit is deeply flawed. By setting a loose standard of "substantial" equivalence to condemn products or processes that are concededly outside the scope of a patent claim, the ruling undermines the Patent Act's insistence, as a core part of the general statutory bargain offered inventors, that a patentee define with precision the contours of what is claimed as the protected monopoly (35 U.S.C. § 112). Under the Act, it is the obligation of the patentee to put the world on exact notice of what is protected and what is freely available, as a condition of securing the legal monopoly that excludes others from even the most innocent infringement (35 U.S.C. § 271). See Bonito Boats v. Thunder Craft Boats, 489 U.S. 141, 150, 159 (1989) (noting "the bargain held out by the federal patent system of disclosure in exchange for exclusive use"); Universal Oil Prods. Co. v. Globe Oil & Refining Co., 322 U.S. 471, 484 (1944) ("quid pro quo" for monopoly is "precision of disclosure"). The broad doctrine of equivalents also overrides Congress's specific provision granting protection for "equivalents" for a targeted class of patents. 35 U.S.C. § 112. And, by allowing all patentees broad protection beyond the terms of the claims that they wrote, the Federal Circuit's ruling effectively allows for modification of patent claims in disregard of Congress's specifically limited provisions for modification (35 U.S.C. §§ 251, 252).

Contrary to the Federal Circuit's view, this Court's 1950 decision in Graver Tank does not mandate or authorize this upsetting of the congressional choices embodied in the 1952 Patent Act. Moreover, neither Graver Tank nor judicial concerns for flexibility in protecting patentees can justify expansion of the patent monopoly in situations, like the present, where (a) the patentee clearly could have protected itself, but instead is invoking the "equivalents" doctrine to cover what it deliberately excluded from coverage in its claims, and (b) the defendant has engaged in no fraud, knowing copying, or other bad faith conduct, but instead created its product independently of any knowledge of the patent or, indeed, of the patented product or process. This Court should grant review to reverse the Federal Circuit's broad definition of the doctrine of equivalents, which creates infringement liability, based on a jury determination of "insubstantial differences," even in such circumstances.

# I. THE CASE PRESENTS A FUNDAMENTAL QUES-TION OF PATENT LAW THAT THIS COURT SHOULD RESOLVE.

1. The decision in this case is of extraordinary, wide-spread importance in the field of patent law. The Federal Circuit itself recognized the significance of the issues presented, ordering sua sponte that the case be heard en banc in order "to consider the important issues raised concerning the doctrine of equivalents." Pet. App. 5a. Briefs amicus curiae were then filed by many, if not most, of the major professional associations concerned with patent law. As one brief put it, the proper scope of the

<sup>&</sup>lt;sup>15</sup> The various amici curiae included the American Intellectual Property Law Association; the Federal Circuit Bar Association;

doctrine of equivalents presents a question "of national public importance." C.A. Brief for Amicus Curiae American Bar Ass'n at 1.

The reason that the issue is important is not hard to fathom. Because the doctrine of equivalents allows patent holders to claim protections beyond the terms of the patent itself, the definition given to the doctrine may well affect "the vast majority of patent infringement lawsuits." C.A. Brief for Amicus Curiae American Bar Ass'n at 2. See also C.A. Brief for Amicus Curiae Federal Circuit Bar Ass'n at 2, 10 (court's resolution of "basic" issues presented "will affect many users of the patent system"). As commentators have noted, "the doctrine of equivalents, once thought to be a narrow doctrine designed to prevent 'fraud on a patent,' has become an issue of fact to be resolved in virtually every patent suit." Martin Adelman & Gary Francione, The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 699 (1989) (footnote omitted).16 Indeed, as one dissenting opinion stated the problem, "[a]ny patentee may invoke [the doctrine]

the American Bar Association; the Houston Intellectual Property Law Association; the Intellectual Property Law Institute; the Iowa State Bar Association; and the California Association for the Advancement of Technology and Invention.

16 See Robert Bajefsky, Patent Equivalency: The Jury Is Still In, Legal Times, Sept. 4, 1995, at 28, 31 ("In recent years, decisions of the Federal Circuit ha[d] suggested dissatisfaction with the doctrine . . . [and its having] become the second prong in the test for infringement in every patent infringement case. At least some Federal Circuit judges wrote opinions limiting the availability of the doctrine . . ."; discussing Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861 (Fed. Cir. 1985); Valmont Industries, Inc. v. Reinke Mfg. Co., 983 F.2d 1039 (Fed. Cir. 1993); London v. Carson Pirie Scott & Co., 946 F.2d 1534 (Fed. Cir. 1991); Texas Instruments Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558 (Fed. Cir. 1986); Charles Greiner & Co. v. Mari-Med Mfg., 962 F.2d 1031 (Fed. Cir. 1992)); William Rooklidge, Federal Circuit Unsettles Doctrine of Equivalents, National Law Journal, Oct. 23, 1995, at C43 (same).

as a second prong to an infringement suit, in addition to the statutory cause of literal infringement," and today "the doctrine is regularly used by patentees to seek greater coverage for their patents than the patent statute grants." Pet. App. 53a (Plager, J., dissenting).<sup>17</sup>

Although any resolution of the issue would involve a matter of great importance, the actual resolution—giving the doctrine of equivalents expansive reach as a supplement to charges of literal infringement-necessarily will have significant effects on patent holders and their potential competitors. Indeed, the decision below stopped in its tracks a process by which a number of panels of the Federal Circuit, during the past decade, had suggested limits on the reach of the doctrine of equivalents as a broadly available second cause of action for infringement. See note 16, supra. In pending as well as potential patent litigation, the immediate effect of the decision is to promote great uncertainty about the scope of patent protection, because the scope of such protection now routinely depends on a jury's broad freedom to determine what differences between products or processes are "substantial." 18 Such uncertainty can be expected to spur additional patent litigation, as patentees decide to pursue suits against defendants who they recognize have not liter-

<sup>17 &</sup>quot;In recent years, perhaps in part due to the restatement, resettling and strengthening of U.S. patent law by [the Federal Circuit's] decisions (and in the absence of a strong countervailing doctrine of patent misuse), some patentees have more frequently alleged infringement of their patents by competitive devices, compositions or methods which are increasingly beyond the literal scope of the patent claims—assertions which could be alleged only under the doctrine of equivalents." C.A. Brief for Amicus Curiae American Intellectual Property Law Ass'n at 5-6.

<sup>&</sup>lt;sup>18</sup> See Pet. App. 118a n.19 (Nies, J., dissenting) (noting statistics showing that well over half of patent trials are now tried to jury, whereas tiny proportion were tried to jury in 1968-1970); In re Lockwood, 50 F.3d 966, 980 n.1 (Fed. Cir. 1995) (Nies, J., dissenting from denial of rehearing en banc), vacated, 64 U.S.L.W. 3182 (Sept. 1, 1995).

ally infringed their patents. And this uncertainty likewise threatens to lengthen and complicate litigation, as the parties and courts undertake a wide-ranging inquiry into whether "substantial differences" exist between the accused and patented products or processes. See Adelman & Francione, 137 U. Pa. L. Rev. at 699 ("the factual nature of the equivalents inquiry makes summary judgment very difficult to get in any case in which the doctrine of equivalents is raised").

The Federal Circuit's ruling can be expected to have adverse effects outside the system of patent litigation as well. The Federal Circuit recognized that "[t]he ability of the public successfully to design around-to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art—is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention." Pet. App. 13a. But the greater the uncertainty about the precise scope of the protected invention to be "designed around," the greater the inhibition on a new inventor's ability and willingness to try to invent in the area of the patent. The broad doctrine of equivalents of the Federal Circuit is likely to have just such a dampening effect on innovation, because it makes inventors distinctly less able to rely on the supposedly precise notice provided by patent claims as to what is legally protected and what is not. Indeed, the United States cited these adverse effects in urging this Court in 1970 to reconsider and repudiate the doctrine of equivalents as "irreconcilable with fundamental principles of congressional patent policy." Brief for United States as Amicus Curiae at 16, Standard Indus. v. Tigrett Indus., No. 445, October Term 1969; see id. at 14 (quoting United Carbon Co. v. Binney Co., 317 U.S. 228, 236 (1942)) ("'[a] zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention

only a little less than unequivocal foreclosure of the field").19

2. This is not a case, moreover, in which it is appropriate to leave the Federal Circuit to its own devices in settling an important question of patent law. In many cases, of course, restraint in reviewing Federal Circuit decisions on patent law is appropriately grounded in the confidence that, with its grant of exclusive jurisdiction, the Federal Circuit has authoritatively settled a question of patent law uniformly for the Nation after full consideration, in light of its accumulated expertise in the area, of all relevant aspects of the question. Ci. Bonito Boats, 489 U.S. at 162 (exclusive jurisdiction to ensure nationwide uniformity). But the premise of that deference is lacking here. The Federal Circuit plainly did not feel itself empowered to solve the problems presented by the doctrine of equivalents; instead, at virtually every turn, it invoked what it regarded as binding precedent of this Court.

The majority thus repeatedly expressed the view that it was constrained to reach its interpretation of the doctrine of equivalents by this Court's Graver Tank decision (and predecessor decisions). See, e.g., Pet. App. 6a-9a (Graver Tank establishes "substantiality of the differences" test); id. at 9a-14a (Graver Tank determines elements of "substantiality" inquiry); id. at 14a-17a (Graver

on the inventor to particularly point out and distinctly claim what the applicant regards as his invention, . . . the legitimate practice of competitive designing around, and the opportunities given to the public to benefit from the mandatory disclosures required of the patentee, all are thrown into disarray by this unpredictable aspect of current patent litigation.").

The Federal Circuit Bar Association explained to the Federal Circuit in its amicus brief (at 12): "the current test is highly indefinite and imposes severe costs on the public from a lack of notice. It is a major source of uncertainty when assessing patent disputes before and during litigation." (footnote omitted).

Tank determines factual character of "equivalents" question). Then, faced with the dissents' detailing of a host of fundamental difficulties presented by its broad doctrine of equivalents (see pages 9-13, supra), the majority did not respond either by denying the reality or seriousness of those difficulties or by undertaking its own thorough analysis of the Patent Act and its requirements. See Pet. App. 25a-32a. Instead, at each crucial point, the majority responded in effect that it was not free to rethink the doctrine because this Court's precedents up to and including Graver Tank supplied a controlling answer. See Pet. App. 25a (fact question for jury); id. at 26a-27a (Graver Tank declares doctrine of equivalents to be consistent with the statutory insistence on precise claiming); id. at 27a-28a (1952 Act did not displace Graver Tank); id. at 28a-29a (Graver Tank precludes addition of elements to "substantiality" test); id. at 30a (Graver Tank "settled the question of the standard of review in doctrine of equivalents cases, foreclosing the dissent's contention"); id. at 30a-31a (relying entirely on Graver Tank for denial that doctrine of equivalents effectively allows enlargement of claim scope); id. at 31a-32a (further reliance on Graver Tank).

In this unusual circumstance, as the dissents pointed out, authoritative resolution of the continuing force of Graver Tank and of the continuing role and contours of the doctrine of equivalents can come only, and should come, from this Court. See Pet. App. 56a (Plager, J., dissenting) ("in today's opinion, the majority abdicates this responsibility [to address the problems caused by its readings of Supreme Court decisions], leaving to the Supreme Court the obligation of attending to the problem if it is to be attended to at all"); id. at 68a-69a; id. at 79a (Lourie, J., dissenting). Judge Lourie put the point most bluntly, stating that, "in light of Graver, it may be that only the Supreme Court, writing without the confining strictures of Graver, can deal cleanly with this

issue." Pet. App. 79a n.3. Indeed, a member of the majority (Judge Newman), while lamenting that "the court's decision today provides no more certainty than did the 1950 decision in *Graver Tank*" (Pet. App. 45a), nonetheless concluded that "any change in the legal and factual fundamentals so explicitly laid out by the Supreme Court is beyond our judicial authority." Pet. App. 33a. 21

# II. THE DECISION OF THE COURT OF APPEALS IS SERIOUSLY FLAWED ON THE MERITS.

1. The Federal Circuit's decision, giving broad play to a jury-determined protection against "substantial" "equivalents," is deeply inconsistent with the Patent Act. The Federal Circuit seemed to view its interpretation of the doctrine of "equivalents" as a construction of the provision protecting patentees against "infringement," 35 U.S.C. § 271(a). Pet. App. 27a-28a. As a textual matter, however, that central provision of the statute, both by its own terms and by the ordinary rules of statutory construction, must be interpreted in light of and in accord with the remainder of the Patent Act. See John Han-

why the bench and bar have struggled so much and so long to define the [doctrine of equivalents] are the ambiguity of the *Graver* opinion, the fact that many of today's patent cases are tried to juries and the *Graver* case did not involve a jury, and the greater complexity of today's patented high technology inventions compared with those made 50 or more years ago." Pet. App. 79a n.3. He concluded that "*Graver* speaks to a time that is long past." *Ibid*.

<sup>21</sup> Judge Newman is not alone in pointing out the confusion engendered by the decision below. A recent commentary on the Federal Circuit's decision, by the principal author of the American Bar Association's amicus brief in the court of appeals, concludes: "The court's decision . . . raises more issues for both the patent bar and the business community than it resolves. . . . Most patent cases that go to trial—the close cases—involve infringement under the doctrine. . . . Hilton Davis adds little but uncertainty to the law of patent infringement." William Rooklidge, Federal Circuit Unsettles Doctrine of Equivalents, National Law Journal, Oct. 23, 1995, at C43, C45.

cock Mut. Life Ins. Co. v. Harris Trust & Sav. Bk., 114 S. Ct. 517, 523 (1993) (provision must be read in light of entire statute). This familiar approach to statutory construction shows that the Federal Circuit's view of protection against "equivalents" stands in sharp tension with the Act as a whole.

By its terms, Section 271 defines "infringement" to mean the unauthorized making, using, or selling of "any patented invention." 35 U.S.C. § 271(a). Although the Federal Circuit asserted that "the statutory definition of infringement . . . makes no reference to claims at all" (Pet. App. 27a), the meaning of the provision naturally turns on what the "invention" is that may not be made, used, or sold, and Section 112 directly addresses that question in terms of "claims." In particular, Section 112 requires the patent applicant (a patentee by the time of the subsequent infringement litigation) to conclude its "specification" "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 (emphasis added). The claims set forth in the patent thus define the invention and, hence, the scope of what is protected under Section 271. Yet, contrary to that textual tying of "infringement" to the "claims" that define the "invention," the essence of the Federal Circuit's doctrine of equivalents is to provide protection in every case for more than is set forth in the claims.

The doctrine of equivalents, as defined by the court below, is inconsistent not only with the text of the Patent Act but with well-established statutory policy as well. The immediate purpose of the fundamental requirement of precision in claiming is to give the world clear notice of the exact scope of the federally protected monopoly—a notice that must be precise if there is to be strict liability for infringement. The doctrine of equivalents, if

applied broadly, can eviscerate both the claiming system and the goal of providing notice to the public of the scope of the patent. The doctrine achieves these results by enlarging, in an unpredictable way, the scope of the patent beyond the boundaries claimed by the applicant . . . ." Adelman & Francione, 137 U. Pa. L. Rev. at 680. Thus, as the United States explained to this Court in 1970, "[t]he judicially-created doctrine of equivalents runs counter to the statutory requirement that the subject of a patent be precisely defined in the patent claims." Brief for United States as Amicus Curiae, supra, at 10-11.

This Court has repeatedly made clear the fundamental importance and purpose of precise definition of the protected claim, a requirement of patent law that long predates the 1952 Act. "The statutory requirement of particularity and distinctness in claims is met only when they clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise." United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942) (emphasis added); id. at 232 (quoting General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938), and Permutit Co. v. Graver Corp., 284 U.S. 52, 60 (1931)) ("The inventor must 'inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not."); Universal Oil Prods. Co., 322 U.S. at 484 (in addition to serving to enable others to make the invention when the legal

<sup>&</sup>lt;sup>22</sup> See 35 U.S.C. § 271; Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 478 (1974). Protection of patent rights, which are declared

after careful and presumptively valid action by an administrative agency seeking to define the ambit of the protected intellectual property (35 U.S.C. § 282), contrasts sharply with the higher standard of liability (requiring proof of copying) protecting copyrighted works, for which judicial definition of the scope of what is protected is inevitable because no agency "claiming" system defines the rights in advance. See Adelman & Francione, 137 U. Pa. L. Rev. at 703-05.

monoply expires, "precision of disclosure is likewise essential to warn the industry concerned of the precise scope of the monopoly asserted"). The Court has thus emphasized that "[t]he claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms." White v. Dunbar, 119 U.S. 47, 51-52 (1886). The Federal Circuit's flexible doctrine of equivalents, however, deprives the public of its ability to rely on the precisely drafted claims as the reach of the legal monopoly.<sup>20</sup>

The importance of precise notice to the public underlies what the Federal Circuit acknowledged to be the "well settled" "rule against enlargement of claim scope during claim construction." Pet. App. 30a; see Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 339-40 (1961); Universal Oil Prods. Co., 322 U.S. at 484-85; Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. (5 Otto) 274, 278-79 (1877). The court of appeals managed to get around this rule, however, by the device of declaring that inventions deemed to be "equivalents" are actually "'the same'" as the patented invention. Pet. App. 30a, quoting Graver Tank, 339 U.S. at 608. But it is mere wordplay, and bad wordplay at that, to say that a product or process falling outside the protection of "literal" infringement—precisely because it is different from the invention as set forth in the patent claim-is, in fact, the same as that invention. In so saying, the court is doing nothing more or less than enlarging the claim in exactly the manner forbidden by the rule against expansion in claim construction. In both situations, "the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office . . . . When the terms of a claim in the patent are clear and distinct (as they always should be), the patentee, in a suit brought upon the patent, is bound by it. . . . He can claim nothing beyond it." Keystone, 95 U.S. at 278.24

2. The foregoing statutory policies, of course, are not absolute. In the Patent Act itself, Congress wrote several specific provisions giving patentees means to protect themselves against too narrow a protection. In particular, Congress provided in Section 112 that "[a]n element in a claim for a combination may be expressed as a means or step for performing a specified function" and "such claim shall be construed to cover the corresponding structure. material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112 (emphasis added). Indeed, the doctrine of equivalents was evidently the background against which this language was written into the 1952 Patent Act. See Pet. App. 102a & n.9 (Nies, J., dissenting) (legislative history reciting explanation from Justice Department official). The decision below, however, allows a patentee to obtain protection for equivalents even though they are not within the targeted statutory provision on "equivalents." As Judge Nies noted. "[i]f a patentee chooses to draft a claim in other form. it is reasonable to conclude Congress intended that the patentee should be bound by the literal language of the claim." Pet. App. 102a-103a.

<sup>&</sup>lt;sup>23</sup> The effect of the doctrine is readily apparent in this case. Although respondent conceded that the process devised by petitioner (which operates at a pH of 5.0) did not come within the literal terms of its patent (which claims a process operating at a pH of approximately 6.0 to 9.0), it was able to obtain an injunction against use of any pH below 9.01, as well as damages—all under the doctrine of equivalents.

<sup>&</sup>lt;sup>24</sup> There is no meaningful difference between defining the range of equivalents protected by a rule of strict infringement liability and defining the scope of the claim. Nevertheless, the Federal Circuit assigned the question of equivalents to the jury, even while it elsewhere held—in a decision now under review in this Court—that the construction of a patent claim is a matter of law for the court. See Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), cert. granted, 64 U.S.L.W. 3238 (No. 95-26; granted Sept. 27, 1995).

Congress also provided in the Act for the very sort of correction of mistakes that the judicial doctrine of equivalents serves to accomplish. Section 251 expressly allows for reissue of patents for that purpose, but only under specified conditions, including that the application for reissue be made within two years of the original grant and that intervening rights of competitors be afforded protection. See 35 U.S.C. §§ 251, 252. The Federal Circuit's doctrine of equivalents allows for judicial disregard of the careful limits of these provisions in their protection of patentees. See Pet. App. 102a-103a (Nies, J., dissenting). As a consequence, "[t]he patentee is much better off evading the reissue procedure which Congress has provided, and resorting to its counterpart, the doctrine of equivalents, created out of the judiciary's sense of 'fairness.' " Id. at 103a-104a.

3. The Federal Circuit placed almost exclusive reliance on Graver Tank in adopting a doctrine of equivalents that is so deeply in tension with the Patent Act. Graver Tank, however, cannot bear that weight as controlling authority for allowing patentees to expand their legal protection as the Federal Circuit held. At a minimum, the decision requires fresh reconsideration, for at least three reasons.

First, Graver Tank pre-dates the 1952 Patent Act, which, as just noted, speaks with some specificity to at least one problem of "equivalents" and thereby tends to cast doubt on the sort of broad "equivalents" protection recognized by the Federal Circuit. Second, the result in Graver Tank was actually to restrict, rather than expand, what the patentee had set forth in its patent claims. Although that result was accomplished in two steps—first an invalidation of certain claims as too broad, then an "equivalents" expansion of the surviving claims—the fact remains that the patent's inclusion of the broad claims, along with the patent's specification, meant that the case

involved no failure of notice to the public: the "infringer was on notice from the patent itself that it was taking an embodiment of the invention." Pet. App. 142a (Nies, J., dissenting); id. at 46a, 47a (Newman, J., concurring) (Graver Tank "was an easy decision on its facts"; it did not broaden the claim); see Adelman & Francione, 137 U. Pa. L. Rev. at 706-709 (Graver Tank actually narrowed the claim). Third, Graver Tank itself relied chiefly on older decisions, such as this Court's 5-4 decision in Winans v. Denmead, 56 U.S. (15 How.) 330 (1854), construing earlier patent statutes that, at least as applied, "did not require specificity in claiming." Brief for United States as Amicus Curiae, supra, at 12.25 The current vitality and significance of Graver Tank thus should be reexamined by this Court before it is accepted as governing authority for the expansive doctrine adopted by the Federal Circuit.

4. Given the careful balance struck by the statutory scheme itself, any departure from its provisions must be taken with considerable restraint. According to the majority of the Federal Circuit, however, non-literal infringement may be proved in any case based on the answer to a single question: are the differences between the two products (or processes) substantial or insubstantial? If

Federal Circuit Bar Ass'n at 15 (describing difference between "central claiming" system, generally pre-dating 1870, which allowed patentee to describe the "central" invention and left it to the courts to define the outer boundaries of what was protected, and subsequent "peripheral claiming" regime, which requires the patent itself to specify the outer boundaries of the claimed protection). A doctrine of equivalents is not out of place under a central claiming system; indeed, under such a regime, the courts have little choice but to undertake the job of defining the substance of the imprecisely defined invention. The doctrine, however, does not transpose readily to a statutory scheme demanding that the patent itself precisely define the line separating what is protected from what is not and designating the Patent and Trademark Office, rather than the judiciary, as the central forum for drawing that line.

the answer is the latter, the doctrine of equivalents is available as a basis to impose liability for infringement without regard to any other factors. The answer to the determinative question, moreover, may be provided by a jury, not by the court.

In our view, this definition of an essentially extrastatutory basis for infringement liability casts the net too far. As several of the dissenting judges suggest, it strikes the wrong balance to reward the patent holder, and punish its competitor, in every case where it is determined that only insubstantial differences exist between their products. In particular, there is no good reason to protect a patent holder from a failure to protect itself; nor is it appropriate to impose liability on competitors engaged in the very sort of creative behavior that the patent laws are intended to encourage. In such circumstances, even if a finding of insubstantial differences can be made, the doctrine of equivalents—as an equity-based form of relief, to be applied by the judge—should not be available to impose liability for infringement.

There is thus no basis for invoking the doctrine to protect a patentee where the patentee should be expected to have protected itself but failed to do so. See generally Adelman & Francione, 137 U. Pa. L. Rev. at 711-29 (describing this as most frequent use of doctrine and criticizing it). It fits with neither the Act nor any sensible policy to protect a patentee against what it excluded from its patent claim, where it could and should have been responsible for making a well-considered decision to exclude. In other words, the doctrine should not extend patent protection to a variation from the claimed invention that the patentee reasonably could have anticipated at the time it obtained its patent: the fundamental statutory policy of precise notice, coupled with the strict liability rule for infringement, should place the burden on the patentee to explore and make careful decisions about possible relaxations of the limitations that it writes into its claim, thus ensuring that the limitations stated in the claim ultimately issued to the public are the extent of its claim. That means, in particular, that a possible relaxation of a limitation (here, for example, the possible lowering of the 6.0 pH minimum) that was actually considered and rejected for inclusion in the claim by the patentee (here, in the documented process before the PTO) should not later be judicially awarded the patentee. Pet. App. 62a-63a (Plager, J., dissenting) (respondent deliberately inserted 6.0 pH limit during processing of patent application, which originally contained no such limit); id. at 150a-151a (Nies, J., dissenting).27

On the other side of the equation, the Federal Circuit was not justified in overriding the statutory commitment to precision of notice where doing so would simultaneously impose liability on defendants who engage in the sort of innovative efforts that the Patent Act is designed to advance. Whether viewed in policy terms or as a separate equity-based cause of action (reflecting Graver Tank's concern with "fraud on a patent" (339 U.S. at 608)), any doctrine of equivalents should condemn only bad faith "copying." Independent inventors like petitioner, who neither had nor should have had knowledge of the patent, should not be held liable for non-literal infringement; nor should defendants who, trying to "design around" a patent, reasonably believed that their products

<sup>&</sup>lt;sup>26</sup> Mistakes can be corrected under Section 251, and some "equivalents" protection can be obtained for claims drafted under the provision of Section 112 referring to "equivalents." See page 25, supra.

infringement protection may be phrased as a matter of "prosecution history estoppel" (see Pet. App. 130a-131a (Nies, J., dissenting)), but that is merely a label for stating what is, by definition, simply a limit on the availability of infringement protection under the doctrine of equivalents: only what does not appear in the issued patent claim can have been given up in the "prosecution." The reason for the change during the prosecution of the patent application should be irrelevant to the obligation of the patent applicant to protect itself.

were in fact substantially different (even if a factfinder would now find that they were not). At most, only those defendants who essentially knew that they were copying, i.e., who lacked a good faith reasonable belief in non-equivalence with the patented product or process, should be liable. Such a rule would provide breathing space for the very inventive practices encouraged by the Patent Act and the Patent Clause of the Constitution, much as the "knowledge of falsity"/"reckless disregard" standard of libel law provides breathing space for speech protected by the First Amendment. See Gertz v. Robert Welch, Inc., 418 U.S. 323, 342 (1974). In any event, the Federal Circuit's version of the doctrine is unjustifiably sweeping and should be reviewed.

#### CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted,

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November 6, 1995

# APPENDICES

### APPENDIX A

# UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

93-1088

HILTON DAVIS CHEMICAL Co.,

Plaintiff-Appellee,

1.

WARNER-JENKINSON COMPANY, INC., Defendant-Appellant.

Appeal from U.S. District Court for the Southern District of Ohio, Western Division Judge Weber

DECIDED: August 8, 1995

Before ARCHER, Chief Judge,\* RICH, Circuit Judge, COWEN, Senior Circuit Judge, NIES, NEWMAN, MAYER, MICHEL, PLAGER, LOURIE, CLEVENGER, RADER, and SCHALL, Circuit Judges.\*\*

Opinion of the court filed PER CURIAM. Concurring opinion filed by Circuit Judge NEWMAN. Dissenting

<sup>\*</sup> Circuit Judge Archer assumed the position of Chief Judge on March 18, 1994, replacing Circuit Judge Nies.

<sup>\*\*</sup> Circuit Judge Bryson, who entered on duty on October 7, 1994, has not participated in the disposition of this case.

opinion filed by Circuit Judge PLAGER, in which Chief Judge ARCHER and Circuit Judges RICH and LOURIE join. Dissenting opinion filed by Circuit Judge LOURIE, in which Circuit Judges RICH and PLAGER join. Dissenting opinion filed by Circuit Judge NIES, in which Chief Judge ARCHER joins in part.

### PER CURIAM.

Hilton Davis Chemical Co. sued Warner-Jenkinson Co., Inc. for infringement of U.S. Patent No. 4,560,746 (the '746 patent). The jury found that the '746 patent was not invalid and that Warner-Jenkinson infringed under the doctrine of equivalents. The trial court entered judgment on the jury verdict. Hilton Davis Chem. Co. v. Warner-Jenkinson Co., No. C-1-91-218 (S.D. Ohio June 22, 1992). Because substantial evidence supports the jury verdict of infringement, the court en banc affirms.

# **BACKGROUND**

Hilton Davis and Warner-Jenkinson manufacture dyes, including FD&C (food, drug, and cosmetic) Red Dye # 40 and Yellow Dye # 6. The process of making these dyes yields impurities as byproducts. Manufacturers must remove these impurities from the dyes to meet stringent governmental requirements for food and drug purity. Historically, Hilton Davis and Warner-Jenkinson used an expensive and wasteful process known as "salting out" to purify the dyes. The '746 patent, assigned to Hilton Davis, discloses an improved purification process that replaces salting out with "ultrafiltration." Ultrafiltration uses os-

mosis to separate components of a solution by drawing some of the components, but not others, through a membrane. Thus, the '746 process filters impure dye solution through a membrane at certain pressures, pHs, and pore diameters. Impurities, but not dye molecules, pass through the membrane, leaving a high purity dye product.

Hilton Davis began its search for an alternative to the salting out process in 1982. The co-inventors of the '746 process, Drs. Cook and Rebhahn, led this project for Hilton Davis. The inventors decided to investigate a membrane separation process. Dr. Cook then hired Osmonics, Inc., a filtration equipment manufacturer, to test the process on a Hilton Davis Red Dye # 40 solution which had been disclosed to Osmonics under a secrecy agreement. The first test, in August 1982, did not succeed. Dr. Cook then instructed Osmonics to perform a second Red Dye # 40 test with specified changes in the test membrane and filtration procedures. This second test, in October 1982, succeeded. Osmonics successfully purified Hilton Davis Yellow Dye # 6 under Dr. Cook's instructions in January 1983.

The inventors filed their initial patent application based on the October 1982 and January 1983 test results. After further in-house testing by Dr. Cook, the inventors filed a continuation-in-part application claiming a broader range of membrane pore sizes. The '746 patent issued in 1985.

The '746 patent claims a process for purifying commercial dyes including Red Dye # 40 and Yellow Dye # 6. Claim 1, the only independent claim at issue, appears in Jepson form. See In re Jepson, 1917 C.D. 62, 243 O.G. 525 (Ass't Comm'r Patents 1917). Claim 1 recites:

In a process for the purification of a dye selected from [a group including Red Dye # 40 and Yellow Dye # 6] . . . the improvement which comprises:

The court took this case en banc to resolve specific questions concerning the doctrine of equivalents. Consequently, the en banc court has assigned the issue of validity of the '746 patent, raised by Warner-Jenkinson, to the panel which initially heard the appeal. The validity issue is decided in a separate panel opinion also issued today. See Hilton Davis Chem Co. v. Warner-Jenkinson Co., No. 93-1088 (Fed. Cir. Aug. 8, 1995) (nonprecedential).

subjecting an aqueous solution . . . to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing [through] said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate . . . recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.

(Emphasis added.) The inventors added the phrase "at a pH from approximately 6.0 to 9.0" during prosecution to distinguish U.S. Patent 4,189,380 to Booth et al. (the Booth patent). The Booth patent discloses an ultrafiltration process that, among other differences from the '746 process, operates at a pH above 9 and preferably between 11 and 13.

Warner-Jenkinson developed its accused ultrafiltration process for Red Dye # 40 and Yellow Dye # 6 in 1986. Like the '746 process, Warner-Jenkinson's accused process included ultrafiltration through a membrane. At trial, Hilton Davis showed that Warner-Jenkinson's process operated at pressures somewhere in a range of 200 to nearly 500 p.s.i.g. and a pH of 5. While Hilton Davis did not present actual pore size measurements for Warner-Jenkinson's membrane, several experts testified that a membrane collecting Red Dye # 40 and Yellow Dye # 6 would have a nominal pore diameter of 5 to 15 Angstroms.

In 1982, Warner-Jenkinson had tested a membrane separation process on a dye solution that had already been salted out. Warner-Jenkinson, like Hilton Davis, hired Osmonics under a secrecy agreement to perform its test. Osmonics performed the Warner-Jenkinson test in August

1982, one week before it performed the first Hilton Davis test. The Warner-Jenkinson test was not successful, however because it did not produce a sufficiently pure dye. After the unsuccessful test, Warner-Jenkinson ceased work on filtration of Red Dye #40 and Yellow Dye #6 until 1986.

Warner-Jenkinson did not learn of the '746 patent until October 1986, after it had begun commercial use of its ultrafiltration process to purify Red Dye # 40. Hilton Davis learned of Warner-Jenkinson's process in 1989 and sued Warner-Jenkinson for patent infringement in 1991.

After considering extensive evidence offered over nine days, the jury found that the '746 patent was not invalid and that Warner-Jenkinson infringed under the doctrine of equivalents. The jury found that Warner-Jenkinson did not willfully infringe, however, and awarded only 20% of Hilton Davis' request in damages. The district court then denied Warner-Jenkinson's post-trial motions, and entered a permanent injunction prohibiting Warner-Jenkinson from practicing ultrafiltration except at pressures above 500 p.s.i.g. and pHs above 9.01.

Warner-Jenkinson appealed the infringement and validity findings. After a panel of this court heard oral argument on July 9, 1993, the court en banc decided to rehear the appeal to consider the important issues raised concerning the doctrine of equivalents. This court asked the parties to brief three questions:

1. Does a finding of infringement under the doctrine of equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, and (c) result, the so-called triple identity test of Graver Tank [& Manufacturing Co.] v. Linde Air Products Co., 339 U.S. 605 (1950), and cases relied on therein? If yes, what?

- 2. Is the issue of infringement under the doctrine of equivalents an equitable remedy to be decided by the court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case?
- 3. Is application of the doctrine of equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of the claim, discretionary in accordance with the circumstances of the case?

Oral argument directed to the en banc questions occurred on March 7, 1994.

# DISCUSSION

1.

This case presents an opportunity to restate—not to revise—the test for infringement under the doctrine of equivalents. Courts have applied the doctrine of equivalents to protect the substance of the patentee's right to exclude since the first few decades after enactment of the Patent Act of 1790, ch. 7, 1 Stat. 109. Sitting as Circuit Justice, Justice Story, the leading intellectual property scholar of that era, stated:

Mere colorable differences, or slight improvements, cannot shake the right of the original inventor.

Odiorne v. Winkley, 18 F. Cas. 581, 582 (C.C.D. Mass. 1814) (No. 10,432) (Story, C.J.). Indeed, the Supreme Court has consistently recognized the doctrine of equivalents as a protection for patent owners. See, e.g., Winans v. Denmead, 56 U.S. (15 How.) 330, 343 (1854); Sewall v. Jones, 91 U.S. 171, 184 (1875); Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 41-42 (1929). Often the Supreme Court noted that an accused product or process, to avoid infringement under the doctrine, must include "substantial and not merely colorable" differences

from the patent claims. Singer Mfg. Co. v. Cramer, 192 U.S. 265, 286 (1904); see also McCormick v. Talcott, 61 U.S. (20 How.) 402, 405 (1858); Duff v. Sterling Pump Co., 107 U.S. 636, 639 (1883).

The Supreme Court mapped the modern contours of the doctrine of equivalents in its landmark Graver Tank decision. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950). In Graver Tank, the Court addressed whether Graver Tank's use of a particular electric welding flux infringed Linde Company's patent. The patent claimed "essentially a combination of alkaline earth metal silicate and calcium fluoride." Id. at 610. Graver Tank's accused flux substituted "silicates of calcium and manganese—the latter not an alkaline earth metal—for silicates of calcium and magnesium." Id. Because only exact duplicates literally infringe, id. at 607, the Court recognized that infringement depended on the long-standing doctrine of equivalents. Id. at 608.

In explaining the bases for the doctrine, the Supreme Court observed that limiting enforcement of exclusive patent rights to literal infringement "would place the inventor at the mercy of verbalism and would be subordinating substance to form." Graver Tank, 399 U.S. at 607. Such a limitation, the Court reasoned, might even encourage infringers "to make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough . . . [to evade] the reach of law." Id.

Based on these predicates, the Supreme Court concluded, the doctrine applies if, and only if, the differences between the claimed and accused products or processes are insubstantial. *Graver Tank*, 339 U.S. at 610. The Court expressed the doctrine in the following terms for the *Graver Tank* case:

The question which thus emerges is whether the substitution of the manganese which is not an alka-

line earth metal for the magnesium which is, under the circumstances of this case, and in view of the technology and prior art, is a change of such substance as to make the doctrine of equivalents inapplicable; or conversely, whether under the circumstances the change was so insubstantial that the trial court's invocation of the doctrine of equivalents was justified.

Id. The Court defined the doctrine of equivalents in terms of the substantiality of the differences between the claimed and accused products or processes. The Supreme Court in Graver Tank thus made insubstantial differences the necessary predicate for infringement under the doctrine of equivalents.

In recent decisions, this court has also stressed the significance of this "insubstantial differences" standard. Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1043, 25 USPQ2d 1451, 1454 (Fed. Cir. 1993); Charles Greiner & Co. v. Mari-Med Mfg., Inc., 962 F.2d 1031, 1036, 22 USPQ2d 1526, 1529 (Fed. Cir. 1992); London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538, 20 USPQ2d 1456, 1458 (Fed. Cir. 1991); Slimfold Mfg. Co. v. Kinkead Indus., Inc., 932 F.2d 1453, 1457 18 USPQ2d 1842, 1846 (Fed. Cir. 1991); Moleculon Research Corp. v. CBS, Inc., 872 F.2d 407, 409, 10 USPQ2d 1390, 1392 (Fed. Cir. 1989); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 935, 4 USPQ2d 1737, 1739 (Fed. Cir. 1987) (en banc), cert. denied, 485 U.S. 961, and cert. denied, 485 U.S. 1009 (1988); Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532, 3 USPQ2d 1321, 1324 (Fed. Cir. 1987). In many of these cases, this court also relied on the so-called triple identity, or function-way-result, test to measure the substantiality of the differences. Valmont, 983 F.2d at 1043; London, 946 F.2d at 1538; Slimfold, 932 F.2d at 1457; Moleculon, 872 F.2d at 410; Pennwalt, 833 F.2d at 934-35. With this case, this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard.

# II.

In applying the doctrine of equivalents, it is often enough to assess whether the claimed and accused products or processes include substantially the same function, way, and result. Courts recognized this principle as early as 1817, when Justice Bushrod Washington, riding circuit, instructed a jury that "[w]here the [claimed and accused] machines are substantially the same, and operate in the same manner, to produce the same result, they must be in principle the same." Gray v. James, 10 F. Cas. 1015, 1016 (C.C.D. Pa. 1817) (No. 5,718); see also Sanitary Refrigerator, 280 U.S. at 42 ("[G]enerally speaking, one device is an infringement of another 'if it performs substantially the same function in substantially the same way to obtain the same result.' . . . [The patent claim] is nevertheless infringed by a device in which there is no substantial departure from the description in the patent, but a mere colorable departure therefrom.") (quoting Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)) (emphasis added). Because examination of function, way, and result often discloses the substantiality of the differences between the accused and claimed products or processes, many courts, including the Supreme Court itself, have used this formulation to describe the doctrine of equivalents. See, e.g., Graver Tank, 339 U.S. at 608 (quoting Sanitary Refrigerator, 280 U.S. at 42); Machine Co. v. Murphy, 97 U.S. at 125.

It goes too far, however, to describe the function-way-result test as "the" test for equivalency announced by Graver Tank. The function-way-result test often suffices to assess equivalency because similarity of function, way,

and result leaves little room for doubt that only insubstantial differences distinguish the accused product or process from the claims. But evaluation of function, way, and result does not necessarily end the inquiry. Indeed, the Supreme Court explained that the function-way-result test arose in an era characterized by relatively simple mechanical technology. *Graver Tank*, 339 U.S. at 609 (reciting history of doctrine). As technology becomes more sophisticated, and the innovative process more complex, the function-way-result test may not invariably suffice to show the substantiality of the differences.

Thus evidence beyond function, way, and result is also relevant to the doctrine of equivalents. In Graver Tank, the Supreme Court identified and relied on factors in addition to similarity of function, way, and result. The Court considered that persons reasonably skilled in the art knew that the manganese in the accused flux was interchangeable for the magnesium in the claimed flux. 339 U.S. at 609, 612. The Court also permitted the fact-finder to infer infringing "imitation" from the lack of evidence that the accused infringer independently developed its flux. Id. at 612.

The Supreme Court's reliance in Graver Tank on factors other than function, way, and result endorses consideration of all evidence relevant to the substantiality of the differences. Because "[e]quivalence, in the patent law, is not the prisoner of a formula," id. at 609, the available relevant evidence may vary from case to case. When a trial record presents only evidence of function, way, and result, then application of the doctrine will necessarily rest on function, way, and result alone. When a record presents other evidence relevant to the substantiality of the differences, however, the fact-finder must consider it.

In either event, the vantage point of one of ordinary skill in the relevant art provides the perspective for assessing the substantiality of the differences. *Valmont*, 983 F.2d at 1043. The test is objective, with proof of the sub-

stantiality of the differences resting on objective evidence rather than unexplained subjective conclusions, whether offered by an expert witness or otherwise.

According to the Supreme Court, "[a]n important factor" to be considered, quite apart from function, way, and result, "is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was." Graver Tank, 339 U.S. at 609. The precedent of this court has also stressed the importance of evidence of known interchangeability to show infringement under the doctrine. See Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1261, 9 USPQ2d 1962, 1969 (Fed. Cir. 1989); Thomas & Betts Corp. v. Litton Sys., Inc., 720 F.2d 1572, 1579, 220 USPQ 1, 6 (Fed. Cir. 1983). The known interchangeability of the accused and claimed elements is potent evidence that one of ordinary skill in the relevant art would have considered the change insubstantial. Without such evidence, the patentee will need other objective technological evidence demonstrating that the substitute nevertheless represents a change that the ordinary artisan would have considered insubstantial at the time of infringement.

Evidence of copying is also relevant to infringement under the doctrine of equivalents, see Graver Tank, 339 U.S. at 612, not because the doctrine of equivalents rests on the subjective awareness or motivation of the accused infringer, but rather because copying suggests that the differences between the claimed and accused products or processes—measured objectively—are insubstantial. When an attempt to copy occurs, the fact-finder may infer that the copyist, presumably one of some skill in the art, has made a fair copy, with only insubstantial changes. Such an inference, of course, would not dominate the doctrine of equivalents analysis. Instead, where the inference arises, it must be weighed together with the other evidence relevant to the substantiality of the differences.

By considering evidence of copying, however, the Supreme Court did not imply that infringement under the doctrine requires bad faith or some other subjective component. Intent is not an element of infringement. See, e.g., Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 478 (1974). A patent owner may exclude others from practicing the claimed invention, regardless of whether infringers even know of the patent:

This question [of infringement] is one irrespective of motive. The defendant may have infringed without intending, or even knowing it; but he is not, on that account, the less an infringer. His motives and knowledge may affect the question of damages, to swell or reduce them; but the immediate question is the simple one, has he infringed?

Parker v. Hulme, 18 F. Cas. 1138, 1143 (C.C.E.D. Pa. 1849) (No. 10,740); see also Kewanee, 416 U.S. at 478; Intel Corp. v. United States Int'l Trade Comm'n, 946 F.2d 821, 832, 20 USPQ2d 1161, 1171 (Fed. Cir. 1991). The Supreme Court, in the exegesis of the doctrine in Graver Tank, notably does not mention a threshold showing of bad faith or evil intent. Proof of bad faith by an infringer may entitle the patent owner to enhanced damages and attorney fees for willful infringement under 35 U.S.C. §§ 284-285 (1988). Evidence of culpable conduct, however, is not a prerequisite nor necessary for application of the doctrine.

The Supreme Court applied the doctrine of equivalents in Graver Tank to prevent "fraud on a patent," 339 U.S. at 608, not fraud by the accused infringer. As Graver Tank demonstrates, preventing "fraud on a patent" involves an objective assessment of the substantiality of the differences between the claimed and accused products or processes. The doctrine of equivalents does not rely on the subjective awareness or intent of the accused infringer. While the doctrine discourages the "unscrupulous copyist,"

339 U.S. at 607, its reach is not so limited. Thus, lack of substantial differences, not the accused infringer's motives or intent, triggers application of the doctrine of equivalents.

Evidence of "designing around" the patent claims is also relevant to the question of infringement under the doctrine. The ability of the public successfully to design around-to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art-is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention. Designing around "is the stuff of which competition is made and is supposed to benefit the consumer." State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1236, 224 USPQ 418, 424 (Fed. Cir. 1985). When a competitor becomes aware of a patent, and attempts to design around its claims, the fact-finder may infer that the competitor, presumably one of skill in the art, has designed substantial changes into the new product to avoid infringement. Again, the strength of this inference may vary from case to case. Evidence of designing around therefore weighs against finding infringement under the doctrine of equivalents.

Evidence that the accused infringer developed its product or process through independent research is not directly relevant to the question of infringement under the doctrine of equivalents. Independent development is not designing around. Independent development means that the accused infringer had no knowledge of the patented invention when it developed its product or process. Without knowledge, the independent developer could not have set out to make its product or process either similar to or different from the claimed invention. Unlike copying or designing around, therefore, independent development itself provides no information about the substantiality of the differences. Furthermore, because intent is not an element of infringement, independent development does not excuse infringement.

ment of the patent owner's right to exclude. See Parker v. Hulme, 18 F. Cas. at 1143. An independently developed product or process that falls within the patent claims or includes only insubstantial differences nevertheless infringes. See Kewanee, 416 U.S. at 478. In sum, those who make only insubstantial changes to a patented product or process are liable for infringement, regardless of their awareness of the patent and its disclosure.

Evidence of independent development is highly relevant, however, to refute a patent owner's contention that the doctrine of equivalents applies because the accused infringer copied, that is, intentionally appropriated the substance of the claimed invention. In Graver Tank, the Supreme Court linked the fact-finder's inference of copying to independent research. 339 U.S. at 612. Because the record lacked evidence of independent development, the fact-finder could infer copying or "imitation." Id. When the patent owner asserts copying, evidence that the accused infringer developed its product or process without knowing of the patent becomes relevant in rebuttal. For this reason, the fact-finder must consider any evidence of independent development in a case where the patent owner alleges copying as probative of infringement under the doctrine of equivalents.

# III.

Infringement, whether literal or under the doctrine of equivalents, is a question of fact. Winans v. Denmead, 56 U.S. (15 How.) at 338; SRI Int'i v. Matsushita Elec. Corp., 775 F.2d 1107, 1125, 227 USPQ 577, 589 (Fed. Cir. 1985) (en banc). The Supreme Court made this abundantly clear in Graver Tank:

A finding of equivalence is a determination of fact. Proof can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by the disclosures of the prior art. Like any other

issue of fact, final determination requires a balancing of credibility, persuasiveness, and weight of evidence. [When tried to the trial court, it] is to be decided by the trial court and that court's decision, under general principles of appellate review, should not be disturbed unless clearly erroneous. Particularly is this so in a field where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience.

339 U.S. at 609-10. The Supreme Court thus reemphasized that infringement under the doctrine of equivalents is an issue of fact. When infringement is tried to the court, as in *Graver Tank*, an appellate court reviews the trial court's infringement finding for clear error. When tried to a jury, an appellate court reviews the jury verdict for lack of substantial evidence. See, e.g., Genentech, Inc. v. Wellcome Found, Ltd., 29 F.3d 1555, 1565, 31 USPQ2d 1161, 1168-69 (Fed. Cir. 1984).

In several recent opinions, this court has referred to the doctrine of equivalents as "equitable." The term "equita-

<sup>&</sup>lt;sup>2</sup> See Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1043 n.1, 25 USPQ2d 1451, 1454 n.1 (Fed. Cir. 1993) ("the doctrine 'is designed to do equity [but] it is not designed . . . to permit a claim expansion that would encompass more than an insubstantial change'") (quoting Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532, 3 USPQ2d 1321, 1324 (Fed. Cir. 1987)); Texas Instruments Inc. v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1173, 26 USPQ2d 1018, 1024 (Fed. Cir. 1993) ("the doctrine of equivalents has been 'judicially devised to do equity'") (quoting Loctite Corp. v. Ultraseal, Ltd., 781 F.2d 861, 870, 228 USPQ 90, 96 (Fed. Cir. 1985)); Charles Greiner & Co. v. Mari-Med Mfg., Inc., 962 F.2d 1031, 1036, 22 USPQ2d 1526, 1529 (Fed. Cir. 1992) ("careful confinement of the doctrine of equivalents to its proper equitable role . . . promotes certainty and clarity in determining the scope of patent rights"); London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538, 20 USPQ2d 1456, 1458 (Fed. Cir. 1991) ("this equitable doctrine evolved from a balancing of competing policies").

ble" can have many meanings. The Supreme Court explained in Graver Tank that the doctrine prevents the unfairness of depriving the patent owner of effective protection of its invention, 339 U.S. at 607, thereby achieving a fair or "equitable" result. Thus, in doctrine of equivalents cases, this court's allusions to equity invoke equity in its broadest sense—equity as general fairness. While recognizing the equity, or fairness, promoted by the doctrine of equivalents, furthermore, the Supreme Court stated unequivocally that application of the doctrine is a question of fact. Id. at 609. This court has followed. SRI, 775 F.2d at 1118 ("It is settled that the question of infringement (literal or by equivalents) is factual. Graver Tank.").

By referring to the doctrine as a doctrine of fairness, neither the Supreme Court nor this court has invoked the myriad implications of an alternative to legal remedies. In addition, neither the Supreme Court nor this court has invoked equity in the technical sense of a set of principles originating in England to compensate for the historically harsh rules of common law. Graver Tank does not discuss any of the principles commonly attending the chancellor's invocation of equitable power, such as the "clean hands" doctrine, the elevated burden of proof, the abuse of discretion standard of review, or the mandatory balancing of the equities. Indeed, the Supreme Court has more than once stated that every patent owner is entitled to invoke the doctrine of equivalents—a proposition inimical to the hypothesis that the doctrine is equitable. See Sanitary Refrigerator, 280 U.S. at 42; Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 556 (1871) ("Patentees . . . are entitled in all cases to invoke to some extent the doctrine of equivalents . . . "). Moreover, the Supreme Court in Graver Tank credited the origin of the doctrine of equivalents to its own decision in Winans v. Denmead -a case at law, not equity. See Graver Tank, 339 U.S. at 608; Winans v. Denmead, 56 U.S. (15 How.) at 338. Therefore, by its terms, Graver Tank did not impliedly

transform a legal basis for recovery into an equitable one. In short, the Supreme Court's cases on the doctrine of equivalents foreclose a holding that the doctrine is a matter of equity to be applied at the court's discretion.

## IV.

In answer to the first question posed by this court en banc, a finding of infringement under the doctrine of equivalents requires proof of insubstantial differences between the claimed and accused products or processes. Often the function-way-result test will suffice to show the extent of the differences. In such cases, the parties will understandably focus on the evidence of function, way, and result, and the fact-finder will apply the doctrine based on that evidence. Other factors, however, such as evidence of copying or designing around, may also inform the test for infringement under the doctrine of equivalents. No judge can anticipate whether such other factors will arise in a given case. Instead, the presence of such factors will depend on the way the parties frame their arguments. Neither the Supreme Court nor this court limits the types of evidence that either party may proffer in support of a factor it considers probative of infringement under the doctrine. The trial judge, however, has a duty to decide whether the proffered evidence is relevant. This duty to assess relevance is no different in a doctrine of equivalents case than in any other type of case. Relevance will be self-evident to the judge in a case tried to the bench. In a jury trial, however, the judge must admit only relevant evidence, and instruct the jury to consider only the admitted evidence in reaching its decision.

In answer to the second question posed by this court en banc, infringement under the doctrine of equivalents is an issue of fact to be submitted to the jury in a jury trial with proper instructions, and to be decided by the judge in a bench trial. The answer to the third question posed by this court en banc necessarily flows from the answer to

the second question. The trial judge does not have discretion to choose whether to apply the doctrine of equivalents when the record shows no literal infringement.

## V.

This court reviews a jury verdict on the fact question of infringement under the doctrine of equivalents for prejudicial error in the jury instructions, Biodex Corp. v. Loredan Biomedical, Inc., 946 F.2d 850, 854, 20 USPQ 2d 1252, 1254 (Fed. Cir. 1991), cert. denied, 112 S. Ct. 2957 (1992), and lack of substantial evidence supporting the verdict, see Genentech, 29 F.3d at 1565.

While jury instructions must correctly state the law, they need only be sufficiently comprehensive to address the issues of material fact raised by the record evidence. Biodex, 946 F.2d at 854. Indeed, "[j]ury instructions must be confined to the issues as presented by the pleadings and evidence." American Hoist & Derrick Co. v. Sowa & Sons, Inc., 725 1350, 1363, 220 USPQ 763, 773 (Fed. Cir.), cert. denied, 469 U.S. 821 (1984).

The sufficiency of jury instructions is not tested in a vacuum. "It is well established that [each] instruction 'may not be judged in artificial isolation,' but must be considered in the context of the . . . trial record." Estelle v. McGuire, 502 U.S. 62, 72 (1991) (quoting Cupp v. Naughten, 414 U.S. 141, 147 (1973)); see also Biodex, 946 F.2d at 862. The words of the instructions take on meaning from the context of what happened at trial, including how the parties tried the case and their arguments to the jury. Accordingly, we must examine the trial context in which the jury instructions were given by the trial court.

Hilton Davis offered evidence of and argued function, way, and result in asserting the doctrine of equivalents. Warner-Jenkinson responded in kind. Warner-Jenkinson also offered evidence of independent development, contend-

ing repeatedly that its lack of knowledge of the '746 patent when it developed its ultrafiltration process excused it from infringement under the doctrine. In its appeal brief, Warner-Jenkinson summarized its interpretation of the doctrine of equivalents:

[The doctrine of equivalents] is an equitable remedy available only upon a suitable showing of the equities. To demonstrate that the equities favor application of the doctrine, the patentee must put forth proof of the equities, and the trial court must find the type of conduct which triggers its application. London v. Carson Pirie Scott & Co., [946 F.2d 1534, 1538, 20 USPQ2d 1456, 1458 (Fed. Cir. 1991)]; Charles Greiner & Co. v. Mari-Med Mfg. Inc., 962 F.2d 1031, 1035-36, 22 [USPQ2d] 1526, 1529 (Fed. Cir. 1992). As an equitable remedy, the doctrine is an issue of law for the court, not the jury.

B. Here, no equitable basis exists for the application of the doctrine. Warner-Jenkinson's processes were developed in cooperation with knowledgeable and experienced vendors in the field including Osmonics . . . . There was no copying or piracy.

As noted, however, the doctrine of equivalents is not an equitable remedy available only on a showing of the equities. Lack of awareness of the patent or its disclosure does not excuse infringement. Parker v. Hulme, 18 F. Cas. at 1143. Accordingly, Warner-Jenkinson could not succeed in erecting an equitable defense to infringement.

In this context, the trial court instructed the jury about the doctrine of equivalents in terms of function, way, and result:

You may find infringement under the doctrine of equivalents when the accused process and the claimed invention perform substantially the same function in substantially the same way to yield substantially the

same result even though the processes differ in name, form or shape.

(Emphasis added.) This formulation correctly stated that the jury "may" rely on the function-way-result test, recognizing that this test is often enough to show infringement under the doctrine. In particular, the trial court tailored its function-way-result instruction to the parties reliance on evidence of function, way, and result in this case.

Moreover, the trial court's instructions correctly resisted Warner-Jenkinson's effort to erect an equitable threshold for application of the doctrine of equivalents. The doctrine of equivalents has no equitable or subjective component. The cases Warner-Jenkinson cites to the contrary-London, 946 F.2d at 1538, and Charles Greiner, 962 F.2d at 1035-36-reaffirm that the Graver Tank objective criteria, as limited by prosecution history and prior art, confine the range of equivalents. These cases do not condition effective patent protection on proof of bad faith. Accidental or "innocent" infringement is still infringement. Intent becomes a requirement only if and when the patent owner seeks enhanced damages or attorney fees for willful infringement under 35 U.S.C. §§ 284-285. In this case, for example, the jury took Warner-Jenkinson's lack of intent into account when it found that Warner-Jenkinson did not willfully infringe. Therefore, under the trial court's instructions, Warner-Jenkinson's evidence of independent development played its proper role: it shielded Warner-Jenkinson from an enhanced damages award, but did not provide a basis for avoiding application of the doctrine. The evidence of independent development in this case, directed as it is only to the issue of whether the accused infringer acted with knowledge of the patent, is irrelevant to showing substantial differences. This court cannot fault the absence of any reference to such evidence in the jury instructions.

Under these circumstanes, the trial court's function-way-result instruction correctly guided the jury to consider the relevant evidence. In a perfect world, the trial court might have provided further guidance—by instructing the jury, for instance, that Warner-Jenkinson's independent development was not an excuse to infringement. Nonetheless, the trial court's function-way-result instruction directed the jury to consider, in assessing infringement, the only evidence relevant to the substantiality of the differences that was offered at trial. Significantly, Warner-Jenkinson did not object to this instruction. Rather, Warner-Jenkinson objected to sending the doctrine of equivalents question to the jury at all, contending that independent development excused it from infringing.

The trial context left the jury to consider the evidence of function, way, and result presented by both parties, the only available evidence going to the substantiality of the differences. In the context of this trial, the instructions properly focused the jury on the evidence relevant to the doctrine of equivalents.<sup>3</sup>

What you are going to hear, what you are going to hear Judge Weber tell you is he's going to tell you about the law of the doctrine of equivalents. Is one thing equivalent to another for purposes of patent infringement. And what he's going to read to you the law is, is that the doctrine of equivalents exists to prevent a fraud on the patent. It exists to keep people from tickling the patent, from making a tiny change that doesn't make any difference at all and then trying to convince people that there really is a difference there.

The closing arguments underscore that the jury properly focused on insubstantial differences in applying the doctrine of equivalents. Counsel for Hilton Davis extensively explained the doctrine to the jury in terms of insubstantial differences:

<sup>...</sup> So does the acid really make any difference in this process? There is not a nickel's worth of difference.

Dr. Cook's notebooks of all the tests they did there were pHs all over the place, from 2 all the way up to 8, and they adjusted

When a jury makes a finding on infringement under the doctrine of equivalents, this court will uphold that finding

these intentionally to see what would happen, and it didn't make a nickel's worth of difference. The process kept running along processing the dye.

So, tickling the patent, cosmetic changes that don't mean a nickel's worth of difference to what Hilton Davis' patent had.

What he is really meaning is Warner-Jenkinson got caught and now they are trying to come up with some excuses to argue their way out of it. It is different, it is different, it is different, but there is no difference at all. Thank you, ladies and gentlemen.

(Emphasis added.) Counsel for Warner-Jenkinson relied on the differences in function, way, and result between the claimed and accused processes and on its independent development:

In any event, what else do they do? pH. They try to tell you that pH doesn't matter. This is interesting the way they did this. Here's what Mr. Schmit asked Mr. Cook on direct examination. Question, "In terms of whether or not the process will work to separate the dye from the impurities, does it make a difference what pH you operate at?["] There is Mr. Cook's answer. "Not to my knowledge." Okay. And Mr. Kinman told you, "Not to my knowledge, pH doesn't make a difference." And why did they tell you that? They tell you that because they want you to think that our pH of 5 doesn't really make a difference; therefore, we are doing substantially the same thing they are doing. . . .

So this doctrine of equivalents, the reason I'm spending so such time on it is that it had a special purpose in the law and it is to get somebody where they see someone's patent and they say, "Gee, that's a great idea." Now, let's just change this little thing and that little thing and they are outside the literal terms of the patent. That's an unscrupulous infringer. That's your fraud on the patent office. The person who does that. It is not the person who develops their own thing, who does their own thing for their own reasons and because they have their own processes. . . .

(Emphasis added.) Thus, the jury received the case with emphasis on the substantiality of the differences supplied in closing argu-

if supported by substantial evidence. Genentech, 29 F.3d at 1565. "It is not for this Court to even essay an independent evaluation of this evidence. This is the function of the trial court." Graver Tank, 339 U.S. at 611. Thus, the next question is the sufficiency of the evidence to support the jury verdict.

The '746 claims recite a pH "from approximately 6.0 to 9.0." Warner-Jenkinson at times used a lower pH of 5.0. The claims also recite a pressure of "approximately 200 to 400 p.s.i.g." Warner-Jenkinson used a pressure somewhere in a range of 200 to nearly 500 p.s.i.g.

Substantial evidence supports the jury finding that Warner-Jenkinson's pH variation from the claimed approximate range was insubstantial. The claimed pH limitation prevents damage to the membrane and produces a neutral final dye product. Dr. Cook, one of the inventors, testified that a pH of 5 would have the same effect as a pH of 6, as would any pH above 2. Even Warner-Jenkinson's expert agreed that Hilton Davis' process would operate at a pH of 5. The record contains substantial evidence that one of skill in the art would know that performing ultrafiltration at a pH of 5 would allow the membrane to perform the same function, in an equivalent way, to achieve the same result as at a pH of approximately 6 to 9.

Substantial evidence also supports the jury finding that Warner-Jenkinson's pressure for some of its membranes was in the claimed range of approximately 200 to 400 p.s.i.g. Warner-Jenkinson argues for pressure measurement at the high pressure pump instead of at the membrane. Warner-Jenkinson's pressure at the high pressure pump may have been as high as nearly 500 p.s.i.g. The specification, however, defines the pressure as "applied to the upstream side of the membrane." The '746 patent, col. 6, lines 20-21. In any event, the record contains sub-

ments and focus on the function-way-result test supplied by jury instructions.

stantial evidence that Warner-Jenkinson's pressure performed the same function—forcing the solution through the membrane—in an equivalent way, to achieve the same result.

As for pore size, the trial record details the difficulty of measuring a membrane's exact pore size in light of variations in fluid and pressure conditions. The record contains considerable evidence, however, about the pore size necessary to separate dye molecules from smaller molecular impurities. The record thus includes substantial evidence that Warner-Jenkinson necessarily used membranes of the claimed "nominal pore diameter of 5 to 15 Angstroms" to accomplish ultrafiltration.

Nor does prosecution history estoppel preclude application of the doctrine of equivalents in this case. "Whenever prosecution history estoppel is invoked as a limitation to infringement under the doctrine of equivalents, 'a close examination must be made as to, not only what was surrendered, but also the reason for such a surrender." Insta-Foam Prods., Inc. v. Universal Foam Sys., Inc., 906 F.2d 698, 703, 15 USPQ2d 1295, 1298 (Fed. Cir. 1990) (quoting Bayer AG v. Duphar Int'l Research B.V., 738 F.2d 1237, 1243, 222 USPQ 649, 653 (Fed. Cir. 1984 )). The inventors amended the '746 claims to recite "a pH from approximatel 6.0 to 9.0" to avoid the disclosure in the Booth patent of an ultrafiltration process operating at a pH higher than 9. This amendment surrendered pHs above 9, but does not bar Hilton Davis from asserting equivalency to processes such as Warner-Jenkinson's operating sometimes at a pH below 6.

Warner-Jenkinson performed the process disclosed in the '746 patent—purifying dye by collecting relatively large dye molecules on the concentrate side of a membrane. Warner-Jenkinson did not use precisely the claimed process parameters, but the jury found the differences between Warner-Jenkinson's and the claimed processes insubstantial. The record contains substantial evidence supporting this finding of infringement under the doctrine of equivalents.

## VI.

While agreeing that the substantiality of the differences between the claimed and accused products or processes is the ultimate question under the doctrine of equivalents, one dissent contends that "[t]he authority to exercise the unique remedy which is the doctrine of equivalents lies exclusively in courts of equity." This dissent argues that, because the Patent Act of 1952 does not expressly provide a general remedy for infringement under the doctrine of equivalents, the doctrine must be, like other judge-created extensions of inadequate legal remedies, purely equitable. This reasoning, however, is a sharp departure from a century of Supreme Court decisions issued under a stable statutory regime.

The Supreme Court has long held that the question of infringement, whether literal or by equivalents, is a question of fact for the jury if properly demanded. For example, in Coupe v. Royer, 155 U.S. 565 (1895), the Court faced an accused infringer's contention that the trial court had improperly instructed the jury to the plaintiff's advantage regarding the question of infringement under the doctrine of equivalents. Remanding the case for a new trial, the Court held that, despite the lack of a genuine issue of fact regarding either the proper construction of the patent claim or the nature of the accused device, the question of infringement under the doctrine presented a question requiring trial to the jury. Id. at 579-80. In so holding, the Court merely followed its decision in Winans v. Denmead: "whether, in point of fact, the defendant's [devices] did copy the plaintiff's invention, in the sense above explained [i.e., by an equivalent], is a question for the jury." Winans v. Denmead, 56 U.S. (15 How.) at 344. Citiations for this principle can, of course, be multiplied. See, e.g., Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1869).

This dissent also contends that the claiming requirement compels limiting the doctrine of equivalents by equitable principles. The claiming requirement, however, was contained in the Patent Act of 1870, eighty years before Graver Tank. See Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201 ("[B]efore any inventor or discover shall receive a patent . . . he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery . . . . "); see also Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119 (requiring inventor to "particularly specify and point out the part . . . which he claims"). Moreover the Supreme Court in Graver Tank reached its decision over Justice Black's dissent which also invoked the statutory claiming requirement against application of the doctrine. See Graver Tank, 339 U.S. at 613-14 (Black, J., dissenting).

The Supreme Court explained that the doctrine is not inconsistent with the requirement for explicit claims. According to Graver Tank, the "theory on which [the doctrine of equivalents] is founded is that 'if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." 339 U.S. at 608 (quoting Machine Co. v. Murphy, 97 U.S. at 125) (emphasis added); see also Sanitary Refrigerator, 280 U.S. at 41-42 ("There is a substantial identity, constituting infringement, where a device is a copy of the thing described by the patentee, 'either without variation, or with such variations as are consistent with its being in substance the same thing."; quoting Burr v. Duryee, 68 U.S. (1 Wall.) 531, 573 (1864)); Machine Co. v. Murphy, 97 U.S. at 125 ("Authorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself . . . . "). In other words, equivalency, like exact copying, gives rise to infringement liability because it too is a relationship of identity, a proposition quite consistent with the requirement that the patent claim "particularly point out" and thereby circum-

scribe the protected invention. See, e.g., 3 William C. Robinson, The Law of Patents for Useful Inventions § 894 (1890) (discussing the identity theory underlying infringement by equivalents). In addition, by citing Machine Co. v. Murphy for the concept of identity that undergirds infringement by equivalents, the Court in Graver Tank, decided eighty years after the advent of peripheral claiming, relied on a case involving a patent granted in 1859, 97 U.S. at 121, eleven years before the advent of peripheral claiming. Because the statutory definition of infringement has, as will be demonstrated below, remained virtually unchanged since 1790, the Court could rely on this pre-1870 case for the doctrine of equivalents. The dissent's equity model-and its underlying premise that the advent of peripheral claiming in the Patent Act of 1870 dramatically altered the legitimacy or basis of the doctrine of equivalents-would leave the Court's reliance on Machine Co. v. Murphy in Graver Tank utterly inexplicable.

The dissent also suggests that Congress could have, but has not, included the doctrine of equivalents in the Patent Act of 1952, 35 U.S.C. §§ 1-376 (1988 & Supp. V 1993). According to this dissent, "[i]f Congress wanted to provide for [infringement by] equivalents to what is claimed, it knew how to do it." This argument suffers at least three fatal flaws. First, the statutory definition of infringement, which appears in 35 U.S.C. § 271(a), makes no reference to claims at all. Thus, the definition of infringement is at best equivocal on the question of infringement under the doctrine of equivalents. Second, the Supreme Court itself has noted that "§ 271(a) of the new Patent Code [of 1952], which defines 'infringement,' left intact the entire body of case law on direct infringement." Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342 (1961) (emphasis added). Thus, contrary to the dissent's inference that the Patent Act of 1952's silence repealed Graver Tank and its forebears, the Supreme

Court in Aro states that section 271(a) left intact the doctrine of equivalents.

Third, and perhaps most importantly, infringement was defined and understood long before 1952. According to section 4 of the Patent Act of 1790, anyone who without authority "devise[d], ma[d]e, construct[ed], use[d], employed[ed], or vend[ed]" a patented invention was liable to the patentee for "such damages as shall be asessed by a jury." Patent Act of 1790, § 4, 1 Stat. at 111. Similarly, according to section 5 of the Patent Act of 1793, anyone who "ma[d]e, devise[d] and use[d], or s[old]" a patented invention was liable to the patentee for a sum "at least equal to three times the price, for which the patentee has usually sold or licensed to other persons, the use of said invention," a liability to be adjudicated in a legal, not equitable, "action on the case." Patent Act of 1793, ch. 11, § 5, 1 Stat. 318, 322. Section 14 of the Patent Act of 1836 simply provided for a legal "action for damages for making, using, or selling" a patented invention without authority. Patent Act of 1836, § 14, 5 Stat. at 123. Finally, section 59 of the Patent Act of 1870 simply provided "that damages for the infringement of any patent may be recovered by action on the case." Patent Act of 1870, § 59, 16 Stat. at 207. Against this stable backdrop of statutory definitions of infringement, definitions which are virtually indistinguishable from the current 35 U.S.C. § 271(a), the Supreme Court has recognized actions at law for recovery for infringement under the doctrine of equivalents since its Winans v. Denmead decision in 1854. In light of this authority, this court detects no basis to hold that the doctrine of equivalents was rendered extrastatutory and thus equitable by virtue of the silent repeal that the dissent finds in the Patent Act of 1952.

A separate dissent concurs in our conclusion that the function-way-result test is not "the" test for equivalents.

This dissent, however, would prefer to treat the substantiality of the differences as "only one of the factors according to Graver, arguably the most important factor, which a court should consider in deciding whether to apply the" doctrine of equivalents. The Supreme Court, in our view, made the fundamental question "whether under the circumstances the change [in the accused product or process] was so insubtantial that . . . invocation of the doctrine of equivalents [is] justified." Graver Tank, 339 U.S. at 610.

In addition, this separate dissent argues that the accused infringer's intent is relevant to the question whether the accused product or process infringes under the doctrine. As clarified above, however, intent is not an element of direct infringement, whether literal or by equivalents. Neither Graver Tank nor any other authority supports the proposition that preventing "fraud on a patent," 339 U.S. at 608, turns on the subjective awareness or intent of the accused infringer. Moreover, neither evidence of copying, independent development, not "designing around" owes its relevance in a doctrine of equivalents analysis to the state of mind of the accused infringer. Infringement is, and should remain, a strict liability offense.

Finally, this dissent departs from our basic disposition of the case, arguing that our basic holding as to the status of the function-way-result test renders the trial court's instructions in this case plainly erroneous. As has been demonstrated, however, the trial court's instructions were sufficiently comprehensive to direct the jury to consider, in assessing infringement under the doctrine of equivalents, the only evidence relevant to the substantiality of the differences that the parties offered. No more is required. See Biodex, 946 F.2d at 853-54.

A third dissent contends that "because we know what the claim means and we know what process parameters Warner-Jenkinson uses, the issue of infringement under the doctrine [of equivalents] . . . resolves itself into one of law," reviewable de novo on appeal. The Supreme Court squarely renounced arrogation of the fact-finding function in Graver Tank, however, recognizing that an appellate court is not best qualified to assess the facts in a doctrine of equivalents case:

A finding of equivalence is one of fact. . . . Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence. It is to be decided by the trial court [in a bench trial] and that court's decision, under general principles of appellate review, should not be disturbed unless clearly erroneous. Particularly is this so in a field where so much depends upon familiarity with specific scientific problems and principles not usually contained in the general storehouse of knowledge and experience.

Graver Tank, 339 U.S. at 609-10 (emphasis added). In short, the Supreme Court settled the question of the standard of review in doctrine of equivalents cases, foreclosing the dissent's contention.

This dissent also argues for adoption of a new "legal limitation" on the doctrine of equivalents prohibiting "enlargement of the claim." The rule against enlargement of claim scope during claim construction is well settled. See, e.g., Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278-79 (1877). This dissent errs, however, in arguing that application of the doctrine of equivalents enlarges the claim scope. Instead the doctrine of equivalents provides the same protection to the substance of the claim scope provided by the doctrine of literal infringement. As explained in Graver Tank, when there are no substantial differences between the claimed and accused products or processes, "they are the same" in the eyes of the patent law. Graver Tank, 339 U.S. at 608 (quoting Machine Co. v. Murphy, 97 U.S. at 125). The rule

against enlargement, although an essential tenet of claim construction, thus contributes nothing to the inquiry into infringement under the doctrine.

This dissent also purports to discern in some of the Supreme Court's decisions a second "legal limitation" on the doctrine of equivalents limiting "the range of infringing substitutions to those in which components were substituted which were known to be equivalents" when the patent issued. The dissent's analysis is flawed, however. The Court has recognized that post-issuance improvements can infringe under the doctrine. See Sanitary Refrigerator, 280 U.S. at 40-43. Our cases have followed the same course. See, e.g., Moleculon, 872 F.2d at 409; Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1365, 219 USPQ 473, 483 (Fed. Cir. 1983). In Graver Tank, furthermore, the Court recognized the ingenuity of would-be pirates, who may always be expected to find new ways to avoid the literal scope of a patent claim:

One who seeks to pirate an invention, like one who seeks to pirate a copyrighted book or play, may be expected to introduce minor variations to conceal and shelter the piracy. Outright and forthright duplication is a dull and very rare form of infringement.

Graver Tank, 339 U.S. at 607. The doctrine "evolved in response to this experience," id. at 608, and stands as a bulwark against such "insubstantial changes," id. at 607. Limiting the range of potentially infringing substitutions to those known at the time of the patent's issuance would undermine the doctrine, denying patent owners protection of the substance of their inventions against new forms of infringement.

Finally, this third dissent takes issue with the jury's evaluation of the evidence and this court's refusal to apply prosecution history estoppel. Graver Tank bound this court only to review the jury's fact findings and not to rely on our independent views. As has been demon-

strated, each of the jury's fact findings is supported by substantial evidence. Therefore this court must affirm the jury's fact findings, regardless of what result this court might have reached had it been entrusted with fact finding at trial. See Lavender v. Kurn, 327 U.S. 645, 653 (1946).

As for prosecution history estoppel, as explained, this doctrine turns on the reasons for claim amendments during prosecution. *Insta-Foam*, 906 F.2d at 703. That the '746 inventors amended the claims to recite "a pH from approximately 6.0 to 9.0" to avoid the prior art disclosure of a process operating at a pH higher than 9 does not bar Hilton Davis from asserting equivalency to Warner-Jenkinson's process sometimes operating at a pH below 6.

### CONCLUSION

Substantial evidence supports the jury verdict of infringement under the doctrine of equivalents. The judgment of the district court is affirmed.

### COSTS

Each party shall bear its own costs.

**AFFIRMED** 

NEWMAN, Circuit Judge, concurring.

The doctrine of equivalents has neither greatly excited the centers of legal scholarship, nor seriously stirred action-oriented industry. Indeed, there remains a telling silence on the part of the technology community, for or against. Despite the controversial changes proposed in opinions of this court, there has been little objective policy exploration, economic analysis, legislative proposal, or even a search for consensus. There has, of course, been a good deal of speculation flowing from the inconsistency of our decisions.

The court today holds that no change is appropriate in the common law of equivalency as developed by the Supreme Court. I join in that holding, for our conclusion is in accord with precedent, and this en banc decision provides needed repose: the proposed new test of a threshold "equity" determination has been laid to rest, and the criteria of Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 85 USPQ 328 (1950), have been reaffirmed. Indeed, any change in the legal and factual fundamentals so explicitly laid out by the Supreme Court is beyond our judicial authority. I have, however, come to doubt that the doctrine of equivalents is the best way to achieve the result for which it arose, and I encourage the technology-user community to consider whether new procedures, through the legislative process, may better serve the national interest.

Our decision, like every decision of patent principle, affects the national interest in technologic innovation. I have sought to understand how that effect is manifested in the doctrine of equivalents. In so doing I have taken an analytic path not discussed by the court, albeit a path that I believe underlies the common law of equivalency. This path has led me into the thicket of the sociology and economics of patent law, for I have attempted to place the basic question—the role and application of the doc-

trine of equivalents—into the practical context of the purposes and workings of the patent system, as informed by modern scholarship.

The parties and the amici curiae did not discuss this public interest aspect, although the consequences of our decision, as for all law, extend beyond those of the parties involved in the specific dispute. It is a consideration of passing complexity, for the mere availability of recourse to the doctrine of equivalents can affect technologic progress as well as commercial relationships, the core of the patent system. Thus I write to explain my decision, and the considerations that influenced it.

# Technologic Innovation and the National Interest

Technologic innovation 1 has driven the American economy, over the past century, to the exclusion of virtually all other growth factors. Many students of technologic change have explained that innovative activity is fundamental to industrial vigor, developing new markets while strengthening and enriching the nation. E.g., F.M. Scherer, Innovation and Growth (1984); Robert Solow, Technical Change and the Aggregate Production Function, 39 Rev. Econ. & Stat. 312 (1957). The role of patents in this activity is of increasing scholarly interest. E.g., David Silverstein, Patents, Science and Innovation: Historical Linkages and Implications for Global Technological Competitiveness, 17 Rutgers Computer & Tech. L.J. 261 (1991); Zvi Griliches, Patents: Recent Trends and Puzzles, in Brookings Papers on Economic Activity: Microeconomics 291 (Martin N. Baily & Clifford Winston eds., 1989). The technology-user community has always had a practical comprehension of the value of various innovation incentives in particular commercial contexts. See Domestic Policy Review of Industrial Innovation, Department of Commerce (1979).

The doctrine of equivalents derives from the principle that an inventor should be secure in the patent rights granted by the law, even against those who manage to avoid the letter of the invention as it was described or claimed in the patent document. Early in United States patent history Justice Story stressed the superior right of the inventor as against "mere colorable alterations:"

The first question for consideration is, whether the machines used by the defendant are substantially, in their principles and mode of operation, like the plaintiff's machines. . . . Mere colorable alterations of a machine are not sufficient to protect the defendant. . . . The material question, therefore, is not whether the same elements of motion, or the same component parts are used, but whether the given effect is produced substantially by the same mode of operation, and the same combination of powers, in both machines. Mere colorable differences, or slight improvements, cannot shake the right of the original inventor.

Odiorne v. Winkley, 18 F. Cas. 581, 582 (C.C.D. Mass. 1814) (No. 10,432) (charging the jury). As in ensuing decisions, e.g., Winans v. Denmead, 56 U.S. (15 How.) 330, 343 (1854); Singer Mfg. Co. v. Cramer, 192 U.S. 265, 285-86 (1904); and Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 41 (1921); the trier of fact was directed to look to the substance of the invention, and ascertain whether the infringer took that substance. Although some legal theorists have argued that patent principles derived from property and contract law require greater precision than is available from equivalency, the

<sup>&</sup>lt;sup>1</sup> I use the term "innovation" in Schumpeter's meaning of the combination of invention and investment. Joseph A. Schumpeter, Capitalism, Socialism, and Democracy (3d ed. 1950). Schumpeter was one of the first economists formally to recognize that invention of itself produces no economic effect, while patent-based innovation has a positive impact on the economic system as new industries and new goods displace the old.

Court's decisions on equivalency consistently emphasize the interest of justice, in aid of the constitutional purpose of technologic progress.

### Patent Claims

The juridical approach to equivalency began before patents contained "claims" in the detail in which they are now written, and did not change as claim style evolved. The Patent Act of 1836 required all pantentees to state what was "claimed," a practice that was already the custom. See U.S. Patent Office, Information to Persons Having Business to Transact at the Patent Office (1836), reproduced in Karl Lutz, Evolution of the Claims of U.S. Patents, 20 J. Pat. Off. Soc'y 457, 464 (1938). The development of claim style<sup>2</sup> was guided by growing cadres of professional patent examiners and registered patent attorneys, along with the growth of prior art and competing

technologies. Indeed, the increasing specificity in claim style probably made it easier for the "unscrupulous copyist," the words of *Graver Tank*, to appropriate the substance of the invention while evading the letter of the claims.

The public notice aspect of what the patentee "claims," upon interaction with the patent examiner and on consideration of the prior art, is a powerful argument for strict literal reading of claims, even if the result is injustice in particular cases. However, the patent system is of everincreasing importance, due to the dependence of industry on technology, the reduced opportunity to rely on trade secrecy because of today's enlarged analytical capability, the ease and speed of imitation and modification once the innovator has shown the way, the harshness of modern competition, and the ever-present need for industrial incentives. These factors weigh on the side of the innovator, and thus favor a rule that tempers the rigor of literalness. See Patlex Corp. v. Mossinghoff, 758 F.2d 594, 599, 225 USPQ 243, 247 (Fed. Cir.) ("encouragement of avestment-based risk is the fundamental purpose of the patent grant"), modified, 771 F.2d 480, 226 USPQ 985 (Fed. Cir. 1985).

The principle of equivalency thus serves a commercial purpose, as it adjusts the relationship between the originator and the second-comer who bore neither the burden of creation nor the risk of failure. However, there is also the major consideration of the progress of technology. How does the existence of a "doctrine" that transcends the statutory purpose of legal notice of the patent's scope affect that progress? Does the doctrine of equivalents affect the research, development, investment, and commercialization decisions of today's technologic industry, in a way that concerns the national interest?

And if not, what's all the fuss about?

<sup>&</sup>lt;sup>2</sup> The evolution from so-called "central" to "peripheral" claiming was gradual, and apparently unrelated to the difference between the wording of the 1836 phrase "particularly specify and point out the part . . . which he claims," Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119, and the 1870 phrase "particularly point out and distinctly claim the part . . . which he claims," Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201. The history of H.R. No. 1714 (the Patent Act of 1870) suggests that the change in the words of Section 26 was not deemed significant, for this change is not mentioned in the records of the enactment. See Cong. Globe, 41st Cong., 2d Sess. 2681-83 (1870). The Commissioner of Patents wrote that "[i]n 1870 the patent law was revised, but the revision was in the nature of a consolidation of the statutes then in force." Charles Eliot Mitchell, Commissioner of Patents, An Address Delivered at the Proceedings of the Congress on the "Birth and Growth of the American Patent System" (1890), reprinted in Patent Centennial Celebration Proceedings and Addresses, 48-55, at 52 (1891). Commissioner Mitchell stated that the 1836 Act "created an epoch," id. at 50, defining one of the important changes brought about by the 1836 Act to be "the distinction drawn between the description of the invention and the claim." id. at 51, the significance of the claim being that it "set definite walls and fences about the rights of the patentee," id.

# Innovation and Equivalency

Despite our national dependence on technologic advance, there is a sparseness of practical study of whether and how the doctrine of equivalents affects modern industrial progress and the public welfare. However, a helpful debate is developing among scholars, centered upon the optimum scope of patent claims. For example, Robert P. Merges and Richard R. Nelson, On the Complex Economics of Claim Scope, 90 Colum. L. Rev. 839 (1990), suggest that the optimum claim scope is that which will promote "competition in research"; while Edmund W. Kitch. The Nature and Function of the Patent System, 20 J.L. & Econ. 265, 275-80 (1977), suggests that since competition in research is inefficient, broad claims to the originator would provide optimum incentives and serve the larger social welfare. These analyses have drawn thoughtful commentary and further development. For example, touching on the complexity of the issue of equivalency in Patent Law and Rent Dissipation, 78 Va. L. Rev. 305, 348 (1992). Mark F. Grady and Jay I. Alexander write that the "doctrine of equivalents is really the method through which the extent of an invention's technological signal is established." These and other controversial theories aid our understanding, although practical implementation seems to be quite elusive, for determination of the national interest is as complex as the many forms of technology and the varied research and industrial strategies of their development.

I need not belabor that the economic risk in developing new technology is high, that the potential return must warrant the risk, and that the return must pay for the failures as well as the successes. See Paul A. Samuelson & William D. Nordhaus, Economics 658 (12th ed. 1985) (in general, a higher return is required for higher risk than for lower risk investment). The goal on which we must concentrate is the public welfare, as summarized in Mazer v. Stein, 347 U.S. 201, 219, 100 USPQ 325, 333 (1954):

The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in "Science and useful Art."

The principle is today of international force, as the United States seeks to enhance its national strength and international trade with the aid of intellectual property. Indeed, recent economic history illustrates the stagnation of the economy coinciding with periods of diminished industrial investment in technologic advance. Professor Griliches, supra, at 291, wrote "Among the many explanations for the worldwide productivity slowdown in the 1970s, the exhaustion of inventive and technological opportunities remains a major suspect."

The analytic complexity with respect to the doctrine of equivalents arises because technologic growth benefits not only from the activities of the originators, but also from those who improve, enlarge, and challenge. The larger public interest requires setting the optimum balance between the purpose of supporting the innovator, in the national interest, and the purpose of supporting improvement and competition, also in the national interest. The question that I have sought to explore is how the policy and law of the doctrine of equivalents affects this balance.

# Improvements and Equivalency

Persons who appropriate the patentee's concept may add technologic value in a variety of ways: perhaps by developing a different path to the new markets opened by the patentee, perhaps by adapting later-developed technology to enhance that of the patentee, perhaps by perceiving alternatives and opportunities from a different perspective than that of the patentee. All of these activities would bear lower risk to the appropriator if the patentee's claims were strictly limited to their literal scope, for the

patentee's access to the remedy of equivalency imposes upon the appropriator the risk of litigation, damages, and injunction.

Most (but perhaps not all) students of technologic innovation today accept the proposition that there is a larger welfare benefit when the inventor is protected against appropriability by a competitor who did not bear the commercial risk. The cost of substantially imitating an established product, with or without improvements, is usually lower, and always less risky, than the originator's cost of creating, developing, and marketing the new product. Such a competitor can act in a shorter time than was needed by the patentee, and undercut the return to the patentee. See Edwin Mansfield, Mark Schwartz & Samuel Wagner, Imitation Costs and Patents: An Empirical Study, 91 Econ. J. 907 (1981). Because of the diminished risk-weighted incentive to the originator, it has generally been concluded that "total welfare, but not the welfare of consumers, would be increased by making it more difficult to produce close substitutes for existing products." Stanley M. Besen & Leo J. Raskind, An Introduction to the Law and Economics of Intellectual Property, 5 J. Econ. Persp. 3, 5 n.2 (1991).

These and other economic studies support the role of the doctrine of equivalents as a mechanism that makes it more difficult to produce close substitutes, whether by imitation or improvement. There are additional policy refinements, however, for improvements occur on a continuum between minor and major. Not all improvements are equal, and neither are their implications for technologic growth. Much of the current writing on the economic and developmental implications of the scope of patent rights is directed to technologies that are rapidly evolving, primarily in the fields of biotechnology and electronics. There is a growing body of interesting thinking about how to adapt the traditional modes of patenting to the scientific and commercial needs of these technolo-

gies. See, e.g., Pamela Samuelson, Randall Davis, Mitchell D. Kapor & J.H. Reichman, A Manifesto Concerning the Legal Protection of Computer Programs, 94 Colum. L. Rev. 2308 (1994) (proposing a "hybrid" protection for computer software beyond that available from existing legal regimes); Dan L. Burk, Biotechnology and Patent Law: Fitting Innovation to the Procrustean Bed, 17 Rutgers Computer & Tech. L.J. 1 (1991). Indeed, some of the analyses relating equivalency and scientific/ technologic advance, in the context of modern innovation practices, suggest the thought that the doctrine of equivalents today serves the unexpected purpose of being the only readily available tool for application of the law to new technologies. See, e.g., Yusing Ko, An Economic Analysis of Biotechnology Patent Protection, 102 Yale L.J. 777 (1992) (analyzing decisions that applied the doctrine of equivalents).

If minor improvements are likely to be captured by the doctrine of equivalents, this might cause the would-be competitor to move to diverging areas instead of simply tagging along at the periphery of the patentee's claims. On this theory the doctrine of equivalents, like the grant of broad claims, could encourage "leapfrogging" advances instead of minor improvements and substantial imitation. This would enhance the growth of technology overall, and thus serve the public welfare. The patentee too may be encouraged by the broader commercial protection of the doctrine of equivalents, particularly if the optimum commercial form turns out to be at the edge of the patent's claims. A patentee may also be encouraged to continue to study and invest in fine turning the invention, with the added security that the investment, if the project is successful, will be protected even if the patentee's improvements are not separately patentable. See Suzanne Scotchmer, Standing on the Shoulders of Giants: Cumulative Research and the Patent Law, 5 J. Econ. Persp. 29 (1991) (discussing whether patent protection provides incentives for cumulative research). Conversely, it is of

course possible that the originator will allow the technology to stagnate, or that would-be competitors would simply be diverted from the field; these possibilities, however, appear to depend less on the patent system than on many other factors. Each industry has its particular motivations, resources, and competitive situations. They have been well studied for fields that have high research costs, for these fields tend to be more dependent on the patent system as an innovation incentive. See, e.g., Henry G. Grabowski, The Determinants of Industrial Research and Development: A Study of the Chemical, Drug, and Petroleum Industries, 76 J. Pol. Econ. 292 (1968). Merges and Nelson, supra, at 871, discussing the economic models broadly applicable to various types of claim scope, suggest that there is a point at which the available claims are so narrow that the advantages to imitation (as compared to innovation) become sufficiently large that erstwhile innovators will simply wait for something to imitate. Such a scenario is not uncommon for mature technologies. No analysis is generally applicable to all fields of technology and all competitive relationships, as illustrated in the growing literature on the function of patent-type economic incentives. See generally John W. Schlicher, Patent Law: Legal and Economic Principles (1992).

## Competition and Equivalency

In thinking about the effect of the doctrine of equivalents on both innovators and competitors, one must consider how technology, the patent system, and competition interact. The question of equivalency is presented to judges after the competitive situation has crystallized, and thus we tend to focus on the technologic issues as they reach us in a lawsuit, and not on how the technology got to that stage. However, technologic advance, like scientific advance, usually proceeds in small, incremental steps, building on what has gone before, building on one's own work and the work of others. The steps, accumulating, may eventually produce the next generation of techologic progress. Yet each step, viewed alone, may be an insubstantial change. Even minor improvements can displace the originator while adding little to advancing the field. See Besen & Raskind, supra, at 5 & n.2. It is the insubstantial change that is caught by the law of equivalency.

Competition in research and development is important to the nation. There are important distinctions between competition in the research (inventing) stage and in commercial activity. Competition in research, however inefficient its economics, serves the advancement of knowledge in myriad ways. It is often observed that investment in commercialization tends to be more risk-sensitive than investment in research, apparently since the costs of product development and capital plant often dwarf the cost of making the invention. Yet industrial innovation is served by the patent system when the commercial investment is made. To the extent that the doctrine of equivalents enlarges the value of the patent to the innovator it also increases the net social value, as well as serving as a risk-reducing factor in commercial investment. The relevant economic theories on these points are varied, and the analyses are interesting. See, e.g., Janusz A. Ordover, Economic Foundations and Considerations in Protecting Industrial and Intellectual Property, 53 Antitrust L.J. 503, 506-07 (1985) (discussing the effects on innovative efforts of competition in research and development).

The complexities of these relationships far exceed the highlights I have touched. On the present state of the law I have concluded that the doctrine of equivalents, on balance, serves the interest of justice and the public interest in the advancement of technology, by supporting the creativity of originators while requiring appropriators to adopt more than insubstantial technologic change.

Equivalency and Risk

Patent law provides rules of exclusion, priority, and competition that are understood by today's industrial enterprises. Whether from the viewpoint of the originator of technology or the appropriator, the impact of the doctrine of equivalents is as only one of many commercial uncertainties and possibilities. I doubt if much, or any, reliance is placed by originators on the doctrine of equivalents when specific investment decisions are made; at least not by those who have studied precedent. The effect of the doctrine of equivalents as an innovation incentive is more generalized, more subtle.

I believe that the major contribution of the doctrine of equivalents is now, and always has been, to the idea of a fairer, less technocratic, more practical patent system; one that is oriented toward encouraging technologic innovation and discouraging free riding; one that is not at the "mercy of verbalism," in the words of Graver Tank. In this way the doctrine of equivalents can contribute a degree of added investment confidence to the inherently risky environment of new technology. However, it will not serve that function if its application is so unpredictable that it can not be relied upon. Indeed, the determination of technologic equivalency should be reasonably predictable by not only the innovator but also the competitor. When applied to a particular patented invention, it should be reasonably predictable whether a specific device will be found "equivalent."

The possibility of infringement litigation is a risk factor for both the patentee and the appropriator. The patentee will have weighed the strength, breadth, and enforceability of the patent, along with other market benefits and risks, before making a major investment in commercialization. In contrast, for the second-comer these risks are evaluated only after the patentee's product has been

proved successful in the marketplace. A competitor who operates within the "penumbra" of the claims, appropriating the inventor's contribution while skirting the claims, may be deemed to have taken a calculated commercial risk that includes possible litigation. The degree of uncertainty of the outcome necessarily affects the commercial risk; the very existence of a "doctrine" that is applied variably by judges, and at great expense to the parties, has an effect on business decisions.

Some amici curiae complained that as lawyers they can not advise clients with confidence about how close they can come to a patentee's invention, because of the doctrine of equivalents. However, no amicus guided us to resolution of the interests and rights of clients on both sides of the issue, or the national interest. Industry has been silent, except of course for Hilton Davis and Warner-Jenkinson, who have competently argued their positions, each finding sound support in this court's precedent. Uncertainty at the margins of competing policies is not unique to patent law, and is probably no more prevalent than in other commercial causes of action. However, the court's decision today provides no more certainty than did the 1950 decision in Graver Tank, leaving in place the problems of application of the doctrine that have concerned this court.

Uncertainty in the law always disserves the larger public interest, although usually one side or the other is served by it. The uncertainty in judicial application of the doctrine of equivalents surely serves the patentee, perhaps disproportionately. See Louis Kaplow, Rules versus Standards: An Economic Analysis, 42 Duke L.J. 557, 568-77 (1992) (discussing how the cost of compliance with law increases with imprecision of the law). A few authors have offered interesting suggestions for reducing the uncertainty while retaining the just purposes of the doctrine of equivalents, although most authors simply criticize the past without helpful suggestions for the future.

Economic analysis is reasonably consistent in its conclusion that technologic, commercial, and public interests coincide to favor law that favors the innovator as against the second-comer. However, the application of this analysis to the complexities of patent-dependent innovation is not fully understood. And the cases that reach us rarely present a simple choice, even when the "doctrine" is viewed solely as an instrument of justice between specific parties. Graver Tank was an easy decision on its facts. Hilton Davis v. Warner-Jenkinson is not, in my view, an easy decision on its facts.

## Rethinking the Doctrine

Reviewing past decisions that turned on equivalency, one perceives a few dominant scenarios. Usually the accused infringer was already in the commercial field of the invention, and the patented invention was making inroads into its business, providing competitive pressure for technologic response. Occasionally, although rarely, the second-comer made the invention independently.<sup>3</sup> I have made a rough classification of four of the principal circumstances in which the doctrine of equivalents has appeared in litigation.

1. The patent actually claimed the aspect that is sought to be reached under the doctrine of equivalents, but:

- (a) the broad claim that would have been literally infringed was held invalid, and the patentee seeks to recover part of that broader scope under the doctrine of equivalents; and example is *Graver Tank*;
- (b) the broad claim that included literally the element for which equivalency is at issue is not infringed because of other limitations, and the patentee seeks to recover that broader scope through the doctrine of equivalents; an example is *Malta v. Schulmerich Carillons Inc.*, 952 F.2d 1320, 21 USPQ2d 1161 (Fed. Cir. 1991).
- 2. The patent claims did not include a known substitute for a component of the claimed combination:
  - (a) in Rite-Hite Corp. v. Kelley Co., 819 F.2d 1120, 2 USPQ2d 1915 (Fed. Cir. 1987), a known ratchet and pawl mechanism in the claim was replaced with a known rack and pinion mechanism in the accused device;
  - (b) in Perkin-Elmer Corp. v. Westinghouse Electric Corp., 822 F.2d 1528, 3 USPQ2d 1321 (Fed. Cir. 1987), a known tap transformer in the claim was replaced with a known loop transformer in the accused device.
- 3. "Obvious" changes are made in the patentee's device, avoiding the literal scope of the claims:
  - (a) the accused device is in the space between the patent's granted claim and the originally filed claim, which the examiner deemed overly broad and required to be narrowed; as in Laitram Corp. v. Cambridge Wire Cloth Co., 863 F.2d 855, 9 USPQ2d 1289 (Fed. Cir. 1988);
  - (b) the accused device is in the space between the patent's claim and the prior art; as in Wilson Sport-

The patent statute permits an independent inventor to establish its prior right through an "interference" proceeding. Although Warner-Jenkinson states that it had the idea first and independently, it apparently did not attempt to provoke a patent interference with Hilton Davis. Part of the policy justification of the doctrine of equivalents is that if a person who is practicing substantially the same invention can not obtain priority as of right, through the statutory interference process, that person has no right to operate at the fringes of the prior invention. That is, the doctrine of equivalents assures no greater right to one who does not contest priority, than to one who loses a priority contest.

ing Goods Co. v. David Geoffrey & Assoc., 904 F.2d 677, 14 USPQ2d 1942 (Fed. Cir. 1990).

- 4. Usually because of developments in technology, a part of the claimed combination is modified or becomes unnecessary:
  - (a) a step in a multistep process is combined with another step, as in *Corning Glass Works v. Sumitomo Elec. U.S.A.*, *Inc.*, 868 F.2d 1251, 9 USPQ2d 1962 (Fed. Cir. 1989);
  - (b) a step in a multistep process is omitted, as in *Pennwalt Corp. v. Durand-Wayland, Inc.*, 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir. 1987) (en banc).

In each of these four examples, infringement by equivalency was found in (a) but not in (b). It is not the doctrine of equivalents, but the uncertaintly of its application that causes the uncertainty in commercial relationships. Our decision today, while rejecting the proposed equitable considerations that would have added further uncertainty, does not answer the difficult question of improving the predicatability and reducing the uncertainty of technologic decisionmaking. For this reason, I have wondered whether it may be possible to devise a better way to meet the needs now served by the doctrine of equivalents.

For example, the patent law places strong pressure on filing the patent application early in the development of the technology, often before the commercial embodiment is developed or all of the boundaries fully explored. Since the patentee is barred from enlarging the claims after two years from the date of issuance, later developments are excluded from the patent system unless they independently meet the criteria of patentability. From the originator's viewpoint, the inability to protect such developments may be a factor in recourse to the doctrine of equivalents. And

from the viewpoint of the potential competitor, there is no opportunity to test possible encumbrances on later developments.

Most legal documents can be reformed, or amended, or supplemented. However, the available mechanisms for patent documents are extremely limited, for neither the reissue nor reexamination procedure permits adding to the disclosure. Thus some technologic variants can be reached only through litigation invoking the doctrine of equivalents. I invite creative thinking by the bar and technology communities, for if there were statutory procedures whereby patentees could protect their continuing work, there might be justification for limiting infringement to the literal scope of claims thus obtained.4 A statutory system that could accommodate the major factual scenarios of technologic equivalency could provide added certainty both to patentees and to those seeking to build on the subject matter of the patent. I commend the various suggestions already made in recent literature, for they start us on the path to a more useful mechanism for resolution of the question of technologic equivalency.

## Summary

The patent law is directed to the public purposes of fostering technological progress, investment in research and development, capital formation, entrepreneurship, innovation, national strength, and international competitiveness. Our review of the doctrine of equivalents takes place in this context, not as an abstraction insulated from commercial reality. The questions before us are not simple. However, until the technology community provides a better answer, I know of no improvement upon the Court's

<sup>&</sup>lt;sup>4</sup> For example, some countries have handled the issue of continuing developments through a statutory form called a "patent of addition", a mechanism whereby a patentee can add additional disclosure and claims to a patent after it has issued.

holding that the doctrine of equivalents may be invoked when needed to "temper unsparing logic and prevent an infringer from stealing the benefit of an invention." Graver Tank, 339 U.S. at 608, 85 USPQ at 330 (quoting Royal Typewriter Co. v. Remington Rand, 169 F.2d 691, 692, 77 USPQ 517, 518 (1948)).

PLAGER, Circuit Judge, with whom Chief Judge ARCHER and Circuit Judges RICH and LOURIE join, dissenting.

1.

The court today tells us some important things about the doctrine of equivalents. We are told that application of the doctrine turns on one primary test: the substantiality of the differences between the claimed and accused products. The function-way-result test, so often recited since Graver Tank as the controlling test, is not "the" test. Rather, in assessing substantiality, other objective indicia may be considered, such as the known interchangeability of the accused and claimed elements by persons reasonably skilled in the art; whether there is evidence of intentional copying; and whether there is evidence of an attempt to design around the patented matter.

Function-way-result still plays a part, although exactly what that part is may seem obscure to some. That test, it is explained, arose in days of relatively simple mechanical technology. More sophisticated and innovative products may require more sophisticated analysis and thus different evidence, although it would appear that this depends as much on the lawyer and the judge as on the product: the trial judge will decide whether the additional evidence, if any, offered by the patentee is 'relevant' to the case. Straight function-way-result turned out to be sufficient for the ultrafiltration through osmosis technology involved in this case.

The court also tells us that the burden is on the patentee to produce the necessary evidence of insubstantiality, and that these evidentiary questions are questions of fact.

Taken singly, most of these propositions are familiar. Packaged as they are, they may come as a revelation to

<sup>&</sup>lt;sup>1</sup> The term "product" is used here to refer to any category of patentable subject matter. See 35 U.S.C. § 101 (1988).

many in the bar, as they no doubt do to the parties in this case. The court's statement that "[t]his case presents an opportunity to restate-not to revise-the test for infringement under the doctrine of equivalents" is difficult to take literally. What the court has given us is a recipe in which familiar ingredients are to be mixed in a different way, to produce what must be presumed to be a better product. But there is no reason to suppose that the new product will in fact be better. The mixing is still to be done in the dark, by the multiple hands of a jury under minimal instruction. When that product, an announced "ves, it infringes" or "no, it does not" arrives at this court, we will remain as blinded as we are now in our ability to pierce the doctrinal veil. If we are to know where we are going with the doctrine of equivalents, we must know whence it came. The court denies that the doctrine has its roots in a court's traditional equity powers, but provides no substitute explanation for its origin. As a result, we are left with two major problems that are not satisfactorily resolved: what are the controlling bounds of the doctrine, and what are the proper respective roles of judge and jury.

2.

As a preliminary matter, it may be asked why the court needs to undertake this inquiry into the doctrine of equivalents at all. Is something broke that needs fixing? The short answer is yes.<sup>2</sup> One problem is that, whatever role the doctrine of equivalents may have played in earlier

times—and while that is not immaterial it is largely irrelevant—today the doctrine is regularly used by patentees to seek greater coverage for their patents than the patent statute grants. Their demands are presented to a jury which is told to decide the issue based on a formulaic chant—function, way, result—which, as Judge Lourie so aptly describes in his dissent, provides little in the way of guidance, and in some cases may be of no persuasive significance at all.

A related problem is that our current case law imposes no substantial constraints on the availability of the doctrine. Any patentee may invoke it as a second prong to an infringement suit, in addition to the statutory cause of literal infringement. Prior to 1870, the date when inventors were first statutorily required to particularly and distinctly claim their invention, see Act of July 7, 1870, § 26, 16 Stat. 201, the scope of protection turned on the embodiments disclosed in the specification. Courts read these specifications broadly, to include equivalents, in order to give the patentee the full scope of the invention. Over the past hundred or so years, that practice has given way to a focus on precisely what the inventor claims as the invention. The specification remains important, not as the definition of the invention, but as a description of it and as an aid in interpreting the language of the claims.

By today's opinion, the majority essentially blesses the continued unfettered use of the doctrine of equivalents, at the discretion of a jury, noting that in some cases at least the ritual chant will be quite sufficient justification for a rewriting of the claimed limitations. This ignores the fact that, after 1870, claims, not their equivalents, are the determinants of the scope of protection granted by the patent. Claiming practice today serves a purpose which the earlier practice did not, namely providing competitors with notice of the precise invention that they may not make, use, or sell.

<sup>&</sup>lt;sup>2</sup> For commentary on the doctrine, and specific criticisms, see, e.g., Peter Blackman, Doctrine of Equivalents; Ruling Unlikely to Resolve Tension in Patent Law, N.Y.L.J., July 21, 1994, Corporate Update, at 5; Rudolph P. Hofmann, Jr., The Doctrine of Equivalents: Twelve Years of Federal Circuit Precedent Still Leaves Practitioners Wondering, Wm. MITCHELL L. Rev. 1033 (1994); Paul C. Craane, Comment, At the Boundaries of Law and Equity: The Court of Appeals for the Federal Circuit and the Doctrine of Equivalents, 13 N. Ill. U. L. Rev. 105 (1992).

Another problem with the doctrine is that appellate review of many of these doctrine of equivalents cases is largely pro forma. Federal district judges, perhaps understandably, by and large make little pretense of liking these patent infringement cases, and are quite content to give them, and all the issues in them, to juries to decide. The cases typically come to us on appeal with nothing more than a general verdict finding infringement. There is no explanation by the jury of the rationale behind their verdict, if any exists. This case is a good example.<sup>8</sup>

In our review we must assume that the jury understood the technology, understood the law of patents and the policies that underlie it, understood the function, way, and result of the matter, and arrived at a considered decision. It is enough to sustain a jury verdict of infringement by equivalents if the trial court's instructions are without prejudicial error (oftentimes this translates into the less said the better), and if there is any substantial evidence in the record which the hypothetical reasonable juror could have believed, and so believing, arrived at the verdict. A plaintiff must have a virtually impossible case, or incompetent counsel, to fail to have something in the record which can be argued is substantial enough. In short, though the opinions we write, with their routine recitations of our standard of review followed by the

We the Jury, unanimously find that plaintiff Hilton Davis has proved by a preponderance of the legal evidence that defendant Warner-Jenkinson has infringed upon the following claims of the Hilton Davis Patent:

Claim	1	Yes	(infringed)	X	No	(not	infringed)	_
Claim	2	Yes	(infringed)	X	No	(not	infringed)	_
Claim	3	Yes	(infringed)	X	No	(not	infringed)	_
Claim	13	Yes	(infringed)	X	No	(not	infringed)	-
Claim	14	Yes	(infringed)	X	No	(not	infringed)	_

inevitable citations, may tend to obscure the reality, the reality is that the doctrine of equivalents is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose. And this is done largely without regard to and independent of the express limitations of the patent claims which may have brought about their allowance by the Patent and Trademark Office (PTO) in the first place. See Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532-33, 3 USPQ 2d 1321, 1324-25 (Fed. Cir. 1987) ("One must start with the claim, and, though a 'non-pioneer' invention may be entitled to some range of equivalents, a court may not, under the guise of applying the doctrine of equivalents, erase a plethora of meaningful structural and functional limitations of the claim on which the public is entitled to rely in avoiding infringement. . . . The statement should not be interpreted as sanctioning the treatment of claim limitations as insignificant or immaterial in determining infringement. 'It is . . . well settled that each element of a claim is material and essential, and that in order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device.") (quoting Lemelson v. United States, 752 F.2d 1538, 1551, 224 USPO 526, 533 (Fed. Cir. 1985) (footnote omitted)). The obligation on the inventor to particularly point out and distinctly claim what the applicant regards as his invention, discussed below, the legitimate practice of competitive designing around, and the opportunities given to the public to benefit from the mandatory disclosures required of the patentee, all are thrown into disarray by this unpredictable aspect of current patent litigation.

Responsibility for these problems and for the unsatisfactory situation they create lies with the judges. It is the result of how we have interpreted Supreme Court opinions on the matter, and how, largely by default, we have permitted the practice of patent litigation to take the

The jury's findings on infringement consisted in its entirety of the following:

shape it now is in. It is our responsibility to address the situation, and to take effective corrective action. We and the Supreme Court are the only two appellate courts with authority to do this. It is regrettable that, in today's opinion, the majority abdicates this responsibility, leaving to the Supreme Court the obligation of attending to the problem if it is to be attended to at all.

3.

Turning, then, to the question of the doctrine's roots, and thus its boundaries, our examination begins, as it must, with the statute that creates and defines the patent right, 35 U.S.C. §§ 1-376.4 The application for a patent must include a specification which "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. §§ 111, 112 ¶ 2. It is the claims that define the metes and bounds of the right to exclude others from making, using or selling the invention that is granted by the patent. Zenith Lab., Inc. v. Bristol-Myers Squibb Co., 19 F.3d 1418, 1424, 30 USPQ2d 1285, 1290 (Fed. Cir.), cert. denied, 115 S.Ct. 500 (1994).

This has been true for a long time. In the now centuryold case of *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 278 (1877), the Supreme Court said:

Since the act of 1836, the patent laws require that an applicant for a patent . . . "shall particularly specify and point out the part, improvement, or combination which he claims as his own invention or discovery." This provision was inserted in the law for the purpose of relieving the courts from the duty of ascertaining the exact invention of the patentee

by inference and conjecture, derived from a laborious examination of previous inventions, and a comparison thereof with that claimed by him. This duty is now cast upon the Patent Office. There his claim is, or is supposed to be, examined, scrutinized, limited, and made to conform to what he is entitled to. If the office refuses to allow him all that he asks, he has an appeal. But the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office. . . . When the terms of a claim in the patent are clear and distinct (as they always should be), the patentee, in a suit brought upon the patent, is bound by it. Merrill v. Yeomans, 94 U.S. 568. He can claim nothing beyond it.

Judge Rich, explaining current American law to European judges, described it this way:

The U.S. is strictly an examination country and the main purpose of the examination, to which every application is subjected, is to try to make sure that what each claim defines is patentable. To coin a phrase, the name of the game is the claim. . . . the function of claims is to enable everyone to know, without going through a lawsuit, what infringes the patent and what does not.

Giles Rich, The Extent of the Protection and Interpretation of Claims—American Perspectives, 21 INT'L REV. INDUS. PROP. & COPYRIGHT L. 497, 499, 501 (1990).

Nothing in the statute talks about extending the patent right to the equivalents of what is claimed, or to any other version of the invention beyond that described and claimed in the specification. "The specification shall contain a written description of the invention . . .," 35 U.S.C. § 112 ¶ 1, and the patent covers that which is "distinctly claim[ed]." 35 U.S.C. § 112 ¶ 2. If Congress wanted to provide for equivalents to what is claimed, it knew how to

<sup>4</sup> Unless otherwise noted, all citations to the United States Code are to the 1988 version.

do it. In a means plus function claim, for example, the structure, material, or acts that support the claim are to be construed to cover the corresponding structure, material, or acts described in the specification "and equivalents thereof." 35 U.S.C. § 112 ¶ 6. One looks in vain for similar language qualifying the claims that are at the heart of the patent right.

The doctrine of equivalents is a judge-made exception to these statutory mandates. Congress is free to make law without necessarily explaining the reasons for its rules, but that is not a power with which courts are endowed. Nor are courts empowered to rewrite legislation. They may not add new requirements to a comprehensive statutory scheme when there is an absence of even a facially-plausible provision alleged to be subject to interpretation.

Although courts are not empowered to rewrite or add to legislation, the English Chancellor took upon himself in an appropriate case, and American courts of equity have followed suit, the role of protecting legal rights, including rights created by statute, from abuse by a too-narrow application of the law causing an unjust result. See generally Fleming James, Jr., Civil Procedure 8-16 (1965); F.W. Maitland, Equity, 1-22 (1929). This power, however, was carefully cabined. There has to be a showing of truly special circumstances, of a situation in which a wrong would be committed by a mindless application of law. In such a situation, the court of equity does not grant new or unlimited rights to a claimant, but rather protects the claimant's established legal rights by providing a uniquely equitable remedy.

The legal rights established by a patent are defined by the claims. Competitors and other members of the public are entitled to rely on the scope of the claims set out in a patent, as the statute requires, and to design around the patentee's statutorily-protected rights. Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 951, 28 USPQ2d 1936,

1939 (Fed. Cir. 1993) ("It would not be appropriate for us now to interpret the claim differently just to cure a drafting error. . . . That would unduly interfere with the function of claims in putting competitors on notice of the scope of the claimed invention."). In the famous nose of wax analogy, the Supreme Court in White v. Dunbar, 119 U.S. 47, 51-52 (1886), said:

Some persons seem to suppose that a claim in a patent is like a nose of wax, which may be turned and twisted in any direction, by merely referring to the specification, so as to make it include something more than, or something different from, what its words express. . . . The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms. This has been so often expressed in the opinions of this court that it is unnecessary to pursue the subject further.

In most cases, if the claims do not literally apply to the allegedly infringing product, that should end the matter. But, when there is a wrong for which there is no adequate remedy at law, equity courts have traditionally gone beyond the law to impose a just and equitable result. Thus in those special cases in which the competitor's product is literally different but the difference is so insubstantial as to constitute a 'fraud on the patent,' a court in the exercise of its extraordinary equity power may extend the remedy of infringement in order to protect the rights of the patentee granted by law.

The power of courts of equity to deviate from the strict requirements of law is not without limits. Even in the interests of justice, courts of equity are not free to make unfettered and unreviewable decisions. They are as much subject to rules of law as are the law courts. Thomas Jefferson, arguing against giving federal courts

broad equitable powers, said, "Relieve the judges from the rigour of text law, and permit them, with pretorian discretion, to wander into it's equity, and the whole legal system becomes incertain." 9 PAPERS OF THOMAS JEF-FERSON 71 (J. Boyd ed. 1954). The supporters of a strong federal judiciary recognized the merits of the argument. In response to such concerns, Alexander Hamilton wrote, "To avoid an arbitrary discretion in the courts, it is indispensable that they should be bound down by strict rules and precedents which serve to define and point out their duty in every particular case that comes before them." THE FEDERALIST No. 78, at 529 (J. Cooke ed. 1961). This argument echoed the long-running fight between the common law courts of England and the emerging courts of equity.6 Blackstone wrote in his famous commentaries on the English law: "[I]f a court of equity were still at sea, and floated upon the occasional opinion which the judge who happened to preside might entertain of conscience in every particular case, the inconvenience that would arise from this uncertainty, would be a worse evil than any hardship that could follow from rules too strict and inflexible." 3 W. BLACKSTONE, COMMENTAR-IES 440 (1786).

The need for clear and reviewable boundaries is as applicable to patent law as to other areas of law, lest the power inherent in the doctrine of equivalents destroy the reliance on the scope of claims to which every competitor is entitled. "The inventor must 'inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not." United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 232 (1942) (quoting General Elec. Co. v. Wabash Corp., 304 U.S. 364, 369 (1938)).

The majority opinion correctly recognizes the notion of protecting legal rights by extending a flexible remedy when the difference between the protected rights of the patentee and the product of the infringer is insubstantial. But the majority fails to acknowledge-indeed, deniesthe equitable source of that remedy. The court states that the doctrine has "no equitable or subjective component," slip op. at 17, but that confuses the jurisprudential basis of the power with the evidentiary reasons for its exercise. The court further states that the question of infringement, whether literal or by equivalents, is a question of fact, a proposition that no one challenges. But the court follows that statement with the conclusion that, since infringement by equivalents is a question of fact it must therefore be a question for a jury, as if equity courts in the course of their work never decide factual issues.

The court cites cases, such as Coupe v. Royer, an 1895 Supreme Court decision, arguing that it proves that "the question of infringement under the doctrine presented a question requiring trial to the jury." Slip op. at 22. In addition to being somewhat antiquarian (the complaint was brought under the old form of action called trespass on the case), the opinion makes no such holding. The issue in the case was whether the patentee's machine for treating raw hides was infringed by the defendant's machine. There is nothing to indicate that the case involved anything other than a question of literal infringement as it was understood then, and the matter was tried to a jury. The trial judge instructed the jury at some length as to the meaning of the claim language, giving the language a broad construction. The Supreme Court found the judge's construction over-broad and erroneous, stating that "such construction must be in conformity with the selfimposed limitations which are contained in the claims." and cited to Keystone Bridge. On the relative roles of judge and jury, the court quoted from Robinson on Patents: "Where the defense denies that the invention used by the defendant is identical with that included in

<sup>&</sup>lt;sup>5</sup> See T. Plunknett, A Concise History of the Common Law 191-98 (5th ed. 1956).

the plaintiff's patent, the court defines the patented invention as indicated by the language of the claims; the jury judges whether the invention so defined covers the art or article employed by the defendant." 155 U.S. at 579. The judgment was reversed for a new trial under proper instructions.

As Coupe v. Royer and the other cases of that era and since establish, the law provides the patentee with a remedy for infringement of the express terms of the patentee's claims. The patentee, subject to the approval of the Commissioner of Patents and Trademarks, writes those claims, and may claim what he invents. His failure to claim what he might, or as clearly as he might, is a drafting problem, not a judicial one. This does not make light of the difficulty inherent in claim drafting, but merely identifies where the problem and its solution lie. The solution to the problem of inadequate or incomplete claim drafting is not arbitrary after-the-fact 'interpretation' under the guise of 'equivalents,' whether by judge or jury, that goes beyond anything in the claims themselves. See Hoganas, 9 F.3d at 951, 28 USPQ2d at 1939.

In this case, the patentee added a claim limitation of "a pH from approximately 6.0 to 9.0" in order to distinguish the Booth patent, which disclosed an ultrafiltration process using a higher pH. Why the inventors specified a low end of 6.0 is not discussed in the patent. It appears, however, that the designated lower limit was also intentional; Dr. Cook testified at trial that though the process would work to separate the dye from the impurities at pH-values as low as 2.0, a solution with a pH below 6.0 would cause "tremendous foaming problems in the plant." Each whole number below 6.0 represents a difference of 10 times the amount (the pH scale is logarithmic). Yet, under the function-way-result test approved here, a jury might well have found that a pH of 2 or 3 was equally violative under the doctrine. Surely the boundaries of a claim cannot be left that fluid and still

have claims that perform their assigned mission. Courts, either at the trial or appellate level, must be prepared to police the application of this extraordinary power in order to protect the public's interest.

4.

The majority's failure—or refusal—to acknowledge the uniquely equitable nature of the doctrine of equivalents with its built-in constraints leads to a basic error in the opinion, and that is the failure to effectively deal with the respective roles of judge and jury. The majority simply continues the status quo, which, if the plaintiff patentee chooses and the trial judge does not disagree, allows by default both literal infringement and infringement under the doctrine of equivalents to go to the jury. For the reasons discussed earlier, that is operationally unsatisfactory and jurisprudentially unjustified, and in our opinion clearly contrary to the public interest.

The majority offers no persuasive explanation for its position. As it must, the majority recognizes that cases from this court and the Supreme Court often speak of the equitable nature of the relief afforded by the doctrine of equivalents. Slip op. at 13, and n.2. Then by way of ipse dixit, the majority opines that "neither the Supreme Court nor this court has invoked equity in the technical

<sup>&</sup>lt;sup>6</sup> In Transmatic, Inc. v. Gulton Indus., Inc., 835 F. Supp. 1026 (E.D. Mich. 1993), the trial court held that plaintiff was not entitled to a jury trial on the issue of infringement under the doctrine of equivalents because, inter alia, infringement under the doctrine of equivalents is an action in equity to which the right to a jury does not attach. Accordingly, the trial judge, at the conclusion of the trial, rendered a ruling from the bench regarding the doctrine of equivalents, finding the claims at issue not infringed under the doctrine. Transmatic, Inc. v. Gulton Indus., Inc., 849 F. Supp. 526 (E.D. Mich. 1994). On appeal, we reversed, finding the claims at issue literally infringed, and therefore did not address infringement under the doctrine of equivalents. Transmatic, Inc. v. Gulton Indus., Inc., 53 F.3d 1270, 35 USPQ2d 1270 (Fed. Cir. 1995).

sense of a set of principles originating in England to compensate for the historically harsh rules of common law." Slip op. at 14. The opinion makes the rather obvious point that in Graver Tank, the Supreme Court did not discuss clean hands, the abuse of discretion standard of review, balancing of equities, or any of a myriad of other issues that were not before it. All of which goes to establish a point with which there is no disagreement: the issue dealt with today is one that has not been directly confronted before now, either by this court or by the Supreme Court. As Judge Lourie correctly points out in his dissent, "the [Supreme] Court has not ruled in modern times, under our current practice of relying on statutory claims, as to whether the question of the applicability of the doctrine, with all the factors it outlined, must be tried to a jury when properly requested." Slip op. at 14.

Indeed, it is easy to point to cases, old and new, in which, when a jury was impanelled, the function-way-result issue was given willy-nilly to the jury along with the issue of literal infringement. It is understandable that a trial judge, who gets one patent case every few years to try, would be comfortable doing this. The fact that defense counsel have not challenged the practice tells us little, other perhaps than that conventional thinking is easier than any other kind, or that counsel for today's patent infringer will, on the morrow, represent a patentee plaintiff, so that today's jury decision adverse to the infringer may be tomorrow's big win for patentee's counsel.

Nor does the statement by the Court in Graver Tank, that "[a] finding of equivalence is a determination of fact," tell us who decides that question in a jury trial. The fact-law dichotomy discussed in Graver Tank, a non-jury case, was related to the question of the Supreme Court's standard of review when reviewing a judgment of a trial court following a bench trial. The Court had no occasion to discuss the difference between law and equity, and the respective roles of judge and jury.

To label something a fact issue tells us little about who should decide it. In traditional equitable matters—the rights of beneficiaries under trusts, mistake and fraud in contract disputes, domestic relations, to name just a fewquestions of fact are regularly decided by judges. Just as matters of 'fact' may be exclusively for the judge, and not for a jury, when the issue is claim interpretation, an issue we have only recently declared uniquely the responsibility of judges, Markman v. Westview Instruments. Inc., 52 F.3d 967, 34 USPQ2d 1321 (Fed. Cir. 1995) (en banc), so too matters of 'fact' belong to the court when the court exercises its equitable powers in applying the doctrine of equivalents. Cf. Paragon Podiatry Lab., Inc. v. KLM Labs., Inc., 984 F.2d 1182, 1190, 25 USPQ2d 1561, 1568 (Fed. Cir. 1993) (per curiam) ("A patentee has no right to a jury trial respecting the factual element of culpable intent as part of the defense of inequitable conduct.").

Absent some special statutory grant, juries do not exercise equitable powers. There is no issue of a right to a trial by jury under the Seventh Amendment; the court does not suggest that that is the source of the jury's role. By virtue of its unique place in our legal system, and by long-standing custom and tradition, equity powers are exercisable only by judges. The authority to exercise the unique remedy which is the doctrine of equivalents lies exclusively in courts of equity.

5

There are several ways to address the anomalous situation of having had juries involved previously in the application of the doctrine of equivalents. We might acknow-

<sup>&</sup>lt;sup>7</sup> Prior to the merger of law and equity in the federal system, district courts sat in a particular case either in law or equity, as the nature of the case required, and employed separate rules of pleading and procedure. In 1938 these two bodies of jurisprudence were 'merged' so that there was only the one civil action, and only one form of pleading. Merger of the law and equity sides of course did not do away with the historical differences in judicial power, or change the relationship of judge and jury.

ledge the existence of the past practice of giving the issue of the doctrine of equivalents to juries; declare that practice to be antithetical to the jurisprudential roots of the doctrine; and end the practice. As a follow-up, we could give useful guidance to trial judges on how to assess when a situation called for the special imposition of equity into the otherwise statutorily-defined infringement context. This guidance necessarily would emphasize the importance of keeping such matters as copying, independent discovery, and wrongful intent conceptually separate and distinct. Further experience with determining when and in what circumstances the doctrine is appropriately applied would no doubt refine and extend our understanding of these matters.

This would be a bold and clean solution to the matter. Though bold, it would not be radical, its roots being squarely in the great traditions of our courts going back centuries to the office of the King's Chancellor. It would overturn no established law, and would clarify much confusion emanating from the old cases. And it cannot be denied that it would make a major contribution to bringing rationality to this area of patent law.

A second though less bold alternative might be to share the responsibility for the doctrine between judge and jury. Trial judges would be instructed that it is their responsibility to determine when the differences between the patent claims and the allegedly infringing product are so insubstantial, and the circumstances so sufficiently special, as to warrant making the remedy afforded by the doctrine of equivalents available to a patentee. This determination would be independent of the question of whether the doctrine entitles the patentee to relief. That latter question, and the actual application of the doctrine using the function-way-result formula, would be left to the jury. Again, guidance could be given to trial judges on determining when those circumstances exist. This approach to the problem of judge and jury would have the

effect of acknowledging the equitable basis for the doctrine, while preserving the historical practice of giving the function-way-result decision to the jury.

Under this alternative, the trial judge could make the determination at the beginning of the trial process, for example in response to a motion for partial summary judgment regarding the patentee's count alleging infringement under the doctrine of equivalents. Or, in an appropriate case, the trial judge could await presentation of the evidence so as to better understand the extent of the differences between the accused product and the claims, and then rule in response to a motion for judgment on that count. In either event, this court could require that on appeal there would be detailed findings of fact and conclusions of law to review, regardless of what the jury did under the function-way-result test.

This second alternative, an amalgam of two quite diverse approaches to the issue, is not without its problems. In particular, the insubstantiality assessment made by the judge overlaps in considerable degree with the function-way-result analysis to be applied by the jury. Nevertheless, this alternative, though not as bold and not as clean as the first, still would have advanced the matter, and placed in the trial courts, and in this court on review, proper responsibility to police the availability of the extraordinary equitable relief granted under the doctrine, while preserving the role that has been accorded to the jury.

Regrettably, the court today neither cabins the availability of the doctrine, nor places responsibility for determining that availability where it belongs, in the judges who created the doctrine. The court's opinion makes at most a marginal contribution to our understanding of the notion of insubstantiality as an element in analysis. It leaves unchanged the present unsatisfactory decision process, and makes little effort to effectively incorporate its newly-articulated standard into the fabric of the law. At a mini-

mum, it might have been expected that the court would express its disapproval of general jury verdicts of infringement under the doctrine, and insist that juries at least be required to articulate, through special interrogatories, the facts and conclusions that support these verdicts.<sup>8</sup>

The importance of recognizing the equitable basis of the doctrine is not simply that of historical accuracy. The public interest is at issue. When the question is enforcing rights that are specifically defined by statute, it can be assumed that the legislative enactment incorporates the proper balance between private and public, and enforcement of the declared private right is in the public interest. When the question is one of equitable relief, the public interest is a factor that must be weighed in the balance in each case. "As always when federal courts contemplate equitable relief, our holding must also take account of the public interest." U.S. Bancorp Mortgage Co. v. Bonner Mall Partnership, 115 S.Ct. 386, 392 (1994).

The matter before the court in these equivalents cases is not only the claims of the parties against each other, but the interest of the public in protecting reliance by competitors on the public record, and in ensuring that patent rights are given their due and no more. Juries may serve to resolve rights conflicts between private liti-

gants; judges bear the responsibility of ensuring that, when the claims being urged are not based on clearly defined rights, the balance that is struck is struck in the public interest.

This court should accept the duty imposed on us by Congress, as the exclusive appellate forum short of the Supreme Court, to bring a consistent and rationalized practice to the doctrine of equivalents. If we had done that, we would probably have found it appropriate to vacate the decision before us and remand the case to the trial court for further proceedings consistent with that opinion. If we somehow go wrong in the details of how we structure this judicial exercise of equitable power, the Supreme Court, sooner or later, will correct us. It is better that the Supreme Court tell us that we did our duty incorrectly than that we failed to do it at all.

<sup>\*</sup>This court has on several occasions signalled the need for a more disciplined analysis in these cases. See, e.g., Lear Siegler, Inc. v. Sealy Mattress Co. of Mich., Inc., 873 F.2d 1422, 1426, 10 USPQ2d 1767, 1770 (Fed. Cir. 1989) (holding that the three Graver Tank factors must be presented in the form of "particularized testimony and linking argument" or the jury is "more or less put to sea without guiding charts when called upon to determine infringement under the doctrine."); Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320, 1330, 21 USPQ2d 1161, (Fed. Cir. 1991) (Michel, J., concurring) ("[T]he danger that Lear Siegler, building directly on Nestier Corp., is designed to prevent is that of the doctrine of equivalents becoming 'a result oriented catchall."), reh'g denied, 959 F.2d 923 (Fed. Cir.), cert. denied, 112 S.Ct. 2942 (1992).

LOURIE, Circuit Judge, with whom Circuit Judges RICH and PLAGER join, dissenting.

I respectfully dissent from the majority's disposition of this case. I do so because the trial judge did not instruct the jury concerning the doctrine of equivalents ("DOE") in accordance with our opinion today.\(^1\) The trial judge did not tell the jury that the principal issue in evaluating infringement under the DOE is the substantiality of the difference(s) between the accused subject matter and that which is claimed. He emphasized the primacy of the function, way, and result ("FWR") test. We have today held that this is incorrect. In view of these omissions, I believe we must vacate the decision on the basis of plain error in the jury instructions and remand for retrial on

Hilton Davis asserts that the Warner-Jenkinson process for making food dyes infringes the Hilton Davis patent under the doctrine of equivalents. The doctrine of equivalents exists to prevent fraud on the patent.

The concept of the doctrine of equivalents is designed to protect the patent holder from the unscrupulous infringer who appropriates the invention but avoids the literal language of the claims. In this regard, consideration must be given for the purpose for which a step is used in the claims of the patent and in defendant's processes and the functions which they perform.

You may find infringement under the doctrine of equivalents when the accused process and the claimed invention perform substantially the same function in substantially the same way to yield substantially the same result even though the processes differ in name, form or shape.

Hilton Davis must prove infringement under the doctrine of equivalents by a preponderance of the legal evidence.

Though application of the doctrine of equivalents extends the protection of the patent beyond the literal words contained in the claims, it is not proper to erase the meaningful limitations of the claims on which the public is entitled to rely in avoiding infringement, and you must look to the claims section of the patent to determine the coverage and limitations of the patent. the DOE on the basis of instructions consistent with the court's opinion. See 5A JAMES W. MOORE, MOORE'S FEDERAL PRACTICE ¶ 51.04 (2d ed. 1995).

I agree with the majority's conclusion that more is required for application of the DOE than meeting the FWR tests. For many years the courts have been focusing on FWR as the hallmark of a DOE analysis, citing Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 85 USPQ 328 (1950). For reasons I will elaborate on below, such a test has been inadequate, leading to confusion. Moreover, Graver did not prescribe this as the test for the DOE. The Supreme Court in Graver noted that equivalence is not a "prisoner of a formula," id. at 609, and that other factors are involved. including whether the invention was a pioneering one, whether the defendant had engaged in independent research or was an imitator, whether those skilled in the art would have known of the interchangeability of the substituted ingredients, and the substantiality of the difference(s) between the accused and patented materials.

I.

In view of the majority's determination that something more than FWR is required for application of the DOE, with which I heartily concur, I wish to explain further why I believe FWR is inadequate as the sole set of criteria for evaluation of infringement under the DOE. Patentable inventions comprise "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ." 35 U.S.C. § 101 (1988). Except for process inventions, which perforce must be defined by their component procedural steps, inventions are generally defined by structure, i.e., by what they are, rather than by what they do. FWR is most useful in defining what an invention does, but it does not always tell what an invention is. See International Visual Corp. v. Crown Metal Mfg. Co., 991 F.2d

<sup>&</sup>lt;sup>1</sup> The judge instructed the jury concerning the doctrine of equivalents as follows:

(Lourie, J., concurring). A statement of the "function" of a composition of matter, a manufacture, or a machine is not a definition of such an invention. The recitation of the "result" of an invention's operation surely may not be an adequate definition of what the invention is. The "way" the invention achieves its result usually describes the means or mechanism by which it operates, but it does not reliably tell what the invention is. That is what structural terms in claims are for. The dictionary defines "way" as, inter alia, "the mode in which something is done or happens." Webster's Third New International Dictionary 2587 (3d ed. 1986). That is not a definition of an invention.

One of the reasons why the courts have exhibited so much confusion over the DOE is the near exclusive focus on FWR, and the fact that the meaning of the word "way" is so obscure. The substantiality of the differences between a patented and an accused device has often been ignored or subsumed under the "way" component. Unfortunately, however, the "way" component is often satisfied when the substantiality criterion is not. Devices that perform the same function to achieve the same result in the same way may be very different. The result is that devices which should not be accorded the benefit of the DOE because of the substantiality of their differences from what is claimed can be improperly considered to be equivalent if only FWR are considered.

The field of chemistry is one in which this problem may often arise. Ironically, Graver Tank, the case that is our template, is a chemical case. Manganese silicate, the material substituted for magnesium silicate, is obviously a chemical, and the relationship between manganese and magnesium does raise questions of chemistry. However, the claims in that case are to a composition, more like those for a mechanical invention, in which one com-

ponent is substituted for another. Thus, the function and result of that substitution, and even the way in which the questioned component operates, were able to be readily evaluated.

However, much of today's chemical research, and hence invention, consists of new chemical compounds defined by structure, and having a variety of chemical substituents, or structural pieces. New chemical compounds differ structurally from old compounds (that is what makes them new) and yet they may perform the same function (have the same use), provide the same result, and do so in the same way. The fact that they do so in the same way does not make them substantially the same in the way they are defined, i.e., by structure. I emphasized this point in my concurring opinion in Genentech, Inc. v. Wellcome Foundation, 29 F.3d 1555, 31 USPQ2d 1161 (Fed. Cir. 1994), in which I pointed out that a protein containing 446 amino acids could not reasonably be held to infringe a claim to a material with 527 amino acids. The difference between the materials is enormous, irrespective of FWR. One can also consider the example of the wellknown analgesics aspirin and ibuprofen. These compounds have the same function (to provide analgesia, antiinflammatory activity, and lower temperature), do so in the same way (by inhibiting prostaglandin synthesis), and give the same results (kill pain, relieve inflammation, and lower fever). Yet, they have different structures. which makes them different compounds, and no knowledgeable person would consider that a claim to aspirin would be infringed by the sale of ibuprofen.

Moreover, if, following our guidance in Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir. 1987) (in banc), cert. denied, 485 U.S. 961 (1988), one tries to evaluate infringement applying only FWR according to the "all elements" rule, one encounters a practical difficulty because one generally does not know the "way" a particular substituent operates. One only

knows the function, way, and result achieved with the total compound. This is different from electronic and mechanical elements because one normally knows why each electronic or mechanical element is present in a product and what it does. Thus, it is essential that a DOE analysis focus on more than an FWR evaluation. Failure to do so can lead to the wrong result.

#### II.

However, I disagree with the majority's characterization of the "substantiality" issue. The majority emphasizes that it is the added factor prescribed by the Supreme Court in Graver Tank, the others being subsumed within it, rather than being only one of the added factors. The opinion states that the substantiality of the differences factor encompasses all the others, including the FWR test, and that the fact-finder must make a determination on this issue. I agree that substantiality is paramount. I also agree with the majority that the FWR test, along with the extent and number of differences, is an element in determining the substantiality of the differences between the invention and the accused product. Clearly, if the accused and claimed inventions are very different, there can be no infringement. However, the substantiality of the differences is still only one of the factors according to Graver, arguably the most important factor, which a court should consider in deciding whether to apply the DOE.

Graver Tank indicates that these other factors include whether independent development or copying has occurred, the knowledge or lack of knowledge of those skilled in the art of the interchangeability of contested elements, and the pioneer status of the claimed invention. Given the importance of claims in informing the public of what is patented, I would also include as added factors any behavior of the patentee that impairs the ability of the public to reasonably understand from the claims what

is patented. Among these could be disclosure of an unclaimed embodiment in the patent specification, thereby leading the public to believe that what is unclaimed is disclaimed, when it is that unclaimed embodiment that the patentee later seeks to hold as an infringement under the DOE. See Unique Concepts, Inc. v. Brown, 939 F.2d 1558, 1562-63, 19 USPQ2d 1500, 1504 (Fed. Cir. 1991). I would also consider as a factor the failure of the patentee to seek reissue of the patent to cover such embodiment if it knew of the potential infringement during the permissible statutory time period, see 35 U.S.C. § 251.<sup>2</sup>

I also believe that the majority misconstrues the meaning of the factors other than the substantiality of the differences. The majority limits the significance of copying to being part of the evaluation of substantiality. It denies that intent is meaningful and states that lack of independent development is not part of the equivalence evaluation. I believe this is incorrect. The substantiality evaluation, as noted, relates only to the difference(s) between the claimed and accused items, viz., how many differences there are and how substantial they are. Whether an accused infringer has copied or has independently developed its product is a separate matter relating to what the accused did and why, rather than how close its product is to the claimed invention.

One may readily envision a spectrum consisting of copying on one extreme, independent development on the other, and designing around somewhere in between. The latter two activities are clearly praiseworthy, being consistent with the goals of the patent law. Independent development involves doing one's own work, designing one's own product rather than attempting to copy and

<sup>&</sup>lt;sup>2</sup> I do not intend this list to be an exhaustive list of factors that the court should analyze in evaluating infringement under the DOE. Other factors can be recognized and considered when relevant.

make minor changes in a patented product. It requires significant effort, which is readily provable. Copying and designing around are different from independent development. Both involve focusing on the patented invention and attempting to appropriate its valuable features. The difference between copying and designing around is often a matter of degree, depending upon whether one succeeds or not in getting far enough away from the claims to avoid a finding of infringement. Both, however, have the claimed invention in mind and attempt to make as little change in the invention as possible to retain or improve on the properties of the invention, while avoiding infringement. But neither is to be confused with independent development.

Independent development is not, as the majority states, dependent upon lack of knowledge of the patented invention. This rarely happens in a world of instantaneous public information on new developments in just about every field. Inventors who engage in independent development almost always do so with knowledge of others' inventions, but they still try to make their own inventions. This is neither copying nor designing around.

Distance from the claims of a patent (the substantiality of the differences factor) and the history and purpose of one's product development (intent) are thus not synonymous, as the majority's linking of these issues would imply. One can make many changes such that there are substantial differences between its product and the claimed invention, while essentially copying the invention, and not have engaged in independent development. Such a "copier" might be considered to have designed around and not be held to be an infringer under the doctrine. Similarly, one can independently have developed a product that differs only insubstantially from the patented product and properly be held to infringe under the doctrine of equivalents. If the *Graver Tank* tests of substantiality, independent development, and copying are all to have meaning, they

must be considered separately, and not be compressed into one test.

While the majority states that intent, or "bad faith," is not part of the evaluation of infringement, it is part of the copying-independent development spectrum noted by the Supreme Court in Graver. One who attempts to copy another's product stands in different shoes as compared with someone who attempts to independently develop his own product, but ends up close to the claims of someone else's patent. This is surely a question of intent, and it tracks the Court's Graver analysis in considering whether to apply the doctrine to the case at hand. The whole purpose of the doctrine is to defeat piracy and to do justice to a patentee. A pirate is one who intentionally copies a patented product, making only the most minor change to avoid literal infringement. An innocent developer who unintentionally happens to come close to the claims of a patent should be treated differently. The whole tenor of Graver Tank is to make that distinction. This factor is also distinct from the question of the substantiality of the differences. Intent to misappropriate someone else's invention is the hallmark of a pirate, and intent must therefore not be excluded if a suitable judgment is to be made concerning the applicability of the DOE. Therefore, I believe it is the province of the court to balance all these factors to determine whether it is appropriate to apply the DOE under the circumstances of the case.

It may be feared that considering intent under the DOE may lead to inconsistent results as between two different defendants, one who copies and one who independently invents. This is not likely to occur. Even if there are multiple parties selling the same product, but differently situated regarding the way they came to the product, patentees who have lost against one such party are not likely to sue the other. Similarly, when an infringer has lost an equivalents case, another party is not

likely to persist in its commercial activity unless it has substantially better equities, in which case it deserves a different result. Moreover, it is parties who suffer the consequences of patent infringement, not products, and it is not inappropriate for different results to follow different behavior of different parties. The fact that intent is irrelevant in a literal infringement determination should not be controlling in a DOE situation. An accused infringer who is operating outside the claims of a patent is entitled to have its behavior considered differently from someone who is literally within the scope of the claims.

The pioneer status of the invention, not mentioned by the majority, is also not relevant to the substantiality of the differences between the invention and the accused device. However, it should be part of the DOE analysis. It has no relation to the differences between the claims and the accused device, being only a question of the impact of the patented invention in relation to the prior art at the time the invention was made. It was mentioned by the Court in *Graver* and must be considered when relevant. To the extent that the fact-finder endows a patented invention with the status of being pioneering, the more the application of the doctrine of equivalents is justified. Pioneers should be given more scope of protection than inventors in a crowded art. Competitors must stay further away to be safe.

It may be felt that the above framework is highly complicated. However, it includes little that the Supreme Court did not outline and rely on in *Graver*. Moreover, it makes sense. The substantiality of the differences factor is key, but the other factors are part of our law and meaningful. If one is to hold a party operating outside the literal scope of one's claims to be an infringer, contrary to the requirements of the statute, one has to be able to make a case incorporating the various elements

outlined by Graver. If the Supreme Court wishes to simplify the analysis, it is of course free to do so. We are not.<sup>a</sup>

#### III.

Finally, I agree with Judge Plager that applicability of the doctrine should be for the court, not the jury. A finding of infringement under the DOE should properly be viewed as:

the exception, . . . not the rule, for if the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then claims will cease to serve their intended purpose.

London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538, 20 USPQ2d 1456, 1458-59 (Fed. Cir. 1991). See also Coleco Indus., Inc. v. United States Int'l Trade Comm'n, 573 F.2d 1247, 1258, 197 USPQ 472, 481 (CCPA 1978) ("The doctrine is an exception to the rule that patentees are limited to what they claim and is not applied in every case.") (Rich, J., concurring). Under a proper application of these factors, the DOE should be applied only in unsual cases, to frustrate piracy. The fact-finder should principally be focused on claims, as impliedly required by 35 U.S.C. § 112. Otherwise, the meaning of the claims is diminished, contrary to the statutory scheme that a patent specification shall conclude with

<sup>&</sup>lt;sup>3</sup> In fact, in light of *Graver*, it may be that only the Supreme Court, writing without the confining strictures of *Graver*, can deal cleanly with this issue. Among the reasons why the bench and bar have struggled so much and so long to define the DOE are the ambiguity of the *Graver* opinion, the fact that many of today's patent cases are tried to juries and the *Graver* case did not involve a jury, and the greater complexity of today's patented high technology inventions compared with those made 50 or more years ago. Thus, *Graver* speaks to a time that is long past.

claims that particularly point out and distinctly claim the invention.

In making this applicability determination, the court must exercise discretion in weighing the relevant factors. This sounds like a task for a judge, an equitable determination, rather than a question for a jury. I recognize that Supreme Court case law has not reserved determination of infringement under the doctrine to the judge. Graver states that infringement is a question of fact, arguably meaning that it is triable to a jury. The Court, although not recently, has reviewed jury cases involving the doctrine and seemingly endorsed leaving its application to the jury. See Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890); Winans v. Denmead, 56 U.S. (15 How.) 330 (1854).

However, the Court has not ruled in modern times, under our current practice of relying on statutory claims, as to whether the question of the applicability of the doctrine, with all the factors it outlined, must be tried to a jury when properly requested. Graver, the Court's most recent pronouncement on the doctrine, did not involve a jury. In addition, I am not aware of any Supreme Court equivalents case in the last century that involved review of a jury verdict of infringement under the DOE. Most Supreme Court cases prior to Graver involved review of cases brought as bills in equity prior to the merger of law and equity. See, e.g., Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 414-15 (1908). Moreover, older Supreme Court cases involving the DOE that were brought at law, see, e.g. Royer, 135 U.S. at 319, Winans, 56 U.S. (15 How.) at 330, involved patents which issued before the statutory requirement of claims that particularly and distinctly claim the invention. Act of July 7, 1870, § 26, 16 Stat. 201; see also Pennwalt, 833 F.2d at 957-59, 4 USPQ2d at 1758-60 (discussing the evolutionary role of claims in United States patent law). Thus I believe that it is not foreclosed to us to clarify the law by outlining the proper functions of the judge and jury in applying the doctrine of equivalents.

I consider that the DOE is an equitable remedy for the judge to decide whether to apply, or not to apply, perhaps after the jury has made factual findings as to all the relevant factors which the Graver opinion outlines.4 I believe that this judgment, one of suitability or appropriateness, requires weighing all the relevant factors, given any jury determinations concerning those factors. They include the substantiality of the differences, to which FWR is relevant; the copying-independent development spectrum, to which intent is relevant; the pioneering nature of the patented invention, if applicable; and others. The judge needs to decide whether, given the purpose of the doctrine to defeat piracy, a party who is more of a copier than an independent developer, has made only insubstantial changes in the claimed invention, such that, in light of all the other factors, it is appropriate to find that party to be an infringer even though its activities are literally outside the scope of the patent claims.

I would vacate the judgment of the district court and remand for a reevaluation of the question of infringement under the doctrine of equivalents consistent with the above analysis.

<sup>&</sup>lt;sup>4</sup> Application of these factors under the DOE is especially suited to the use of special verdicts and interrogatories under FED. R. CIV. P. 49.

NIES, Circuit Judge, dissenting, with whom Archer, Chief Judge, joins Part IV, Sections C2- 4, D, and E.

I dissent. I concur in Judge Plager's dissent on the issue of infringement to the extent of his eloquent statement of the problem. However, I conclude that the determination of infringement under the "Doctrine of Equivalents," as articulated in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 85 USPQ 328 (1950) (Graver II), and prior Supreme Court precedent presents a series of questions of law, fact, and mixed law and fact. The meaning of the words in the claim must be defined by the court, a question of law. Also, the scope of protection which may be given the claim beyond its words is a question of law. In addition, the accused product or process must meet the limitations of the claim as defined by the court either literally or by equivalent means or steps, questions of fact.

Even though the ultimate finding of infringement is one of fact, once the words of the claim are interpreted and the elements of the accused product or process have been determined, "the correct application of the rule of equivalency" resolves itself into a question of law, whether trial is to the bench, Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 36 (1929), or to the jury, Singer Co. v. Cramer, 192 U.S. 265, 275 (1904). In this jury trial, the district court erred in denying the defendant's motion to direct a verdict in its favor. No infringement can be found as a matter of law upon a correct application of the doctrine of equivalents.

No matter what theory one espouses for the application of the doctrine of equivalents, fact, equity, law, or a combination thereof, infringement cannot be found in this case. To hold that the process of Warner-Jenkinson infringes violates the basic tenet that "courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office." Minerals Separation v. Butte & Superior Mining Co., 250 U.S. 336, 347 (1919).

The doctrine of equivalents, as applied to a claim to a method embodying a series of steps, at most allows substitution of an equivalent step, within the boundaries of the invention as marked out by the claim. Here, there is no substitution of steps which are mere equivalent variants of those required. Hilton Davis must push out the metes and bounds of the area it claimed as its property to ensnare Warner-Jenkinson. A red house has not been painted blue. Rather, the front and back lot lines marked by the word fence of the claim have been moved to take in the adjoining property. Absent this enlargement, Warner-Jenkinson cannot be found an infringer. This expansive view is a misuse of the doctrine of equivalents. Further, prosecution history estoppel applies to specifically restrict one element of the claim in issue.

This appeal raises the basic question of a right to a jury trial on the issue of patent validity, which cries out for resolution. But, assuming that the jury has the role of resolving underlying factual issues, the district court's instructions to the jury were defective. The district court invited guidance from this court on how to use a jury in a patent case. We have not accepted the plea. The entire case, not merely the issue of infringement, was taken in banc. I dissent from the order of the in banc court assigning the validity issue to the original panel.

I.

## BACKGROUND

Both Warner-Jenkinson and Hilton Davis manufacture dyes known as FD&C Red #40 and FD&C Yellow #6 which are used as colorants principally in foods, drugs, and cosmetics. The '746 patent claims a process for preparing dyes by subjecting their aqueous reaction mix-

<sup>&</sup>lt;sup>1</sup> See Asherman v. Meachum, 957 F.2d 978, 983-85 (2nd Cir. 1992), for conflicting views on the propriety of this procedure under 28 U.S.C. § 46 and Fed. R. Civ. P. 35(a).

tures to ultrafiltration under conditions that cause impurities to separate from the reaction mixture, yielding a high purity dye product.

Claim 1 is in Jepson format.<sup>2</sup> Diazotization reactions to make the subject dyes have been used for many years.

[Continued]

The mixtures resulting from diazotization and coupling reactions contain impurities which must be removed to meet FDA specifications. For many years, both Warner-Jenkinson and Hilton Davis purified the dye solutions by a process known as "salting out." This process produced what is called a press cake. Besides being labor intensive, this process had the disadvantages of the expense of the salt, disposal of the brine, and dye loss.

A third party, Osmonics, Inc., was known to specialize in the development of membranes and equipment for fluid purification by ultrafiltration. On July 9, 1982, Dr. Solter, then manager of research and development for the defendant, Warner-Jenkinson, instructed his engineering manager to contact Osmonics and have Osmonics process two of their dye preparations, including FD&C Red #40. Osmonics performed the tests on August 17, 18, and 19, 1982, using its standard ultrafiltration process with various standard Osmonics membranes it selected as appropriate for the size of the molecules to be filtered. Osmonics' standard membranes had a pore size range of 4 Angstroms

<sup>&</sup>lt;sup>2</sup> In a Jepson claim, the preamble before the words "wherein the improvement comprises" recites what is old in the art. The invention of the applicant follows those words. See 2 D. Chisum, PATENTS, § 8.06[1][c]; Ex parte Jepson, 1917 C.D. 62, 243 O.G. 525 (Ass't Comm'r Pat. 1917).

Claim 1, the only independent claim found to be infringed, reads:

<sup>1.</sup> In a process for the purification of a dye selected from the group consisting of the disodium salt of 1-[(6-methoxy-4sulfo-3-methylphenyl) azo]-2-naphthol-6-sulfonic acid, the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid, the trisodium salt of 1-[1-(4-sulfonaphthyl)azo]-2naphthol-3,6-disulfonic acid, the disodium salt of 2-[1-(4sulfonaphthyl) azol-1-naphthol-4-sulfonic acid and the sodium salt of 2-(2-quinoyl)-1,3-indanedione-sulfonic acid as the products resulting, respectively, from the diazotization of 5-methoxy-2-methylsulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 5-methoxy-4-sulfo-2-methylphenyldiazonium chloride with sodium 2-naphthol-6-sulfonate; the diazotization of sulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 4-sulfophenyldiazonium chloride with sodium 2-naphthol-6-sulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with disodium 2-naphthol-3,6disulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with sodium 1-naphthol-4-sulfonate; and the condensation of 2quinaldine with phthalic anhydride followed by sulfonation of the resulting 2-(2-quinolyl)-1,3-indanedione, said dye being present in the resulting reaction mixtures, along with impurities, the improvement which comprises:

<sup>&</sup>lt;sup>2</sup> [Continued]

<sup>[</sup>a] subjecting an aqueous solution of the reaction mixture resulting from said coupling or said sulfonation to ultrafiltration

<sup>[</sup>b] through a membrane having a nominal pore diameter of 5-15 Angstroms

<sup>[</sup>c] under a hydrostatic pressure of approximately 200 to 400 p.s.i.g.,

<sup>[</sup>d] at a pH from approximately 6.0 to 9.0.

to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing into the permeate on the downstream side of said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate, as evidenced by their essential absence in said permeate, recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.

<sup>(</sup>Alphabetic designations, paragraphing and emphasis added.) The dependent claims need not be considered separately in this case.

to 20 Angstroms, a pH range of from 2 to 8½ or 9, and a pressure range of 100 p.s.i.g. to 800 p.s.i.g. Despite successful indications, Warner-Jenkinson did not immediately continue with the project for FD&C Red #40, but worked on other dyes not covered by the claims. Some years later after work on improvement of the Red #40 dye chemistry for filtration purposes, after investigating various vendors of ultrafiltration equipment, Warner-Jenkinson went forward with commercial use of the process, utilizing Osmonics equipment. Such equipment was installed in February 1986 and Warner-Jenkinson was in commercial production, prior to being charged with infringement.

In 1982, Hilton Davis, like Warner-Jenkinson, also decided to investigate a substitute for the salting out process and hired Dr. Wayne Cook to head the project. Neither Dr. Cook, nor anyone else on the Hilton Davis project, was knowledgeable in filtration techniques. Dr. Rebhahn suggested dialysis techniques be used and disclosed the location of an old unused Osmonics device which Hilton Davis had on hand. Dr. Cook then called Osmonics to see if Osmonics could solve his problem. Upon receiving a favorable reply, and just after Warner-Jenkinson contacted Osmonics. Dr. Cook hired Osmonics to test Hilton Davis' Red #40 dye solutions. Osmonics did not use dialysis, but used the ultrafiltration process it had used for Warner-Jenkinson, except Osmonics hydrolyzed the membrane to a greater extent to achieve Hilton Davis's economic goals by achieving faster results. The tests took place on August 24-26, 1982, one week after the tests for Warner-Jenkinson, and further tests were conducted on October 27-29, 1982. A third test was run later on Hilton Davis' Yellow #6 dye.

On the basis of the test results, Hilton Davis filed a patent application in the names of Drs. Cook and Rebhahn on March 28, 1983, covering the ultrafiltration process for certain dyes. In response to rejections, in November 1984, a second (CIP) application was filed, changing various process parameters. After further amendments to overcome cited prior art, the '746 patent issued on December 24, 1985.

In mid-October 1986, Warner-Jenkinson learned of the '746 patent through a reference to it in technical literature. It was unaware before then that Hilton Davis had developed a process similar to the one Warner-Jenkinson was using. On October 12, 1987, Warner-Jenkinson obtained an opinion of patent counsel: (1) that the patent was invalid for obviousness in view of a prior publication of ultrafiltration processes by Osmonics; and (2) that Warner-Jenkinson's process, which was conducted under process limitations outside the ranges set forth in the '746 claims, did not infringe literally or under the doctrine of equivalents.

Sometime later Hilton Davis tested a sample of Warner-Jenkinson's dye and, upon analysis, concluded that it appeared to be prepared by ultrafiltration. It is not possible to tell from the dye what process was used. Representatives of Hilton Davis and Warner-Jenkinson happened to meet in December of 1989, at which time Hilton Davis indicated that it might bring suit against Warner-Jenkinson on the '746 patent. Warner-Jenkinson denied infringement. Without further communication, Hilton Davis brought the instant suit a year later on April 1, 1991.

Trial was to a jury. Warner-Jenkinson defended on the ground of noninfringement and various grounds of invalidity. Throughout the trial, by summary judgment and JMOL motions and by objection to the court's instructions, Warner-Jenkinson urged that the issue of infringement under the doctrine of equivalents should not be submitted to the jury but on the record had to be

<sup>&</sup>lt;sup>3</sup> Dialysis is quite unlike ultrafiltration. Dialysis utilizes a membrane separating two solutions having different concentrations, and works on the principle of diffusion (i.e. no applied pressure). See Ulrich Baurmeister, ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, Vol. 8 at 58-59 (Mary Howe-Granted., 4th ed. 1993).

decided by the court in its favor as a matter of law and/or equity. Respecting validity, Warner-Jenkinson also objected to giving the jury special verdicts requiring answers to ultimate legal issues. It lodged formal objections against the court's instructions which required the jury to decide, for example, obviousness. The court overruled Warner-Jenkinson's various objections to its proposed instructions and sent the case to the jury for answers to nine special verdicts covering the issues of obviousness, inventorship, best mode, willfulness, damages and infringement under the doctrine of equivalents. The jury returned verdicts in favor of Hilton Davis on Warner-Jenkinson's defenses. The jury further found the infringement was not willful and awarded \$3,546,705 on Hilton Davis's claim. The district court entered judgment in accordance with the verdicts, denying Warner-Jenkinson's renewed motion for judgment as a matter of law (JMOL). A final judgment awarding damages and a permanent injunction were entered. Warner-Jenkinson appeals both validity and infringement issues. Hilton Davis did not appeal.

II.

### STANDARD OF REVIEW

To overturn a jury verdict on an ultimate issue of fact, the party against whom the verdict was rendered must satisfy either prong of the following test:

- (1) that the jury's findings of disputed material factual issues, implied or express, are not supported by substantial evidence or,
- (2) that the findings do not support the verdict under the applicable legal standards.

Markman v. Westview Instruments, Inc., 52 F.3d 967, 975-76, 34 USPQ2d 1321, 1326 (Fed. Cir. 1995) (in banc); Read Corp. v. Portec, Inc., 970 F.2d 816, 821, 23 USPQ2d 1426, 1431 (Fed. Cir. 1992); Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 618-619,

225 USPQ 634, 636 (Fed. Cir.), cert. dismissed, 474 U.S. 976 (1985); Railroad Dynamics, Inc. v. A Stucki Co., 727 F.2d 1506, 1513, 220 USPQ 929, 936 (Fed. Cir.), cert. denied, 469 U.S. 871 (1984).

The "substantial evidence" standard of the first prong raises the question whether the jury's resolution of a factual dispute was reasonable. See Dana Corp. v. IPC Ltd. Partnership, 860 F.2d 415, 417, 8 USPO2d 1692, 1694 (Fed. Cir. 1988), cert. denied, 490 U.S. 1067 (1989). In determining reasonableness, the trial court cannot assess the weight of conflicting evidence, pass on the credibility of the witnesses, or substitute its judgment for that of the jury. See Perkin-Elmer Corp. v. Computervision Corp., 732 F.2d 888, 893, 221 USPQ 669, 673 (Fed. Cir.), cert. denied, 469 U.S. 857 (1984); Railroad Dynamics Inc., 727 F.2d at 1512-13, 220 USPQ at 936. A finding of fact must stand unless the court concludes that on the entirety of the evidence of record, viewed in the light most favorable to the nonmovant and taking into account the required quantum of proof, no reasonable juror could have made the finding. Read Corp., 970 F.2d at 821, 23 USPO2d at 1431.

The second prong of the JMOL standard requires the court to apply the correct legal standard for liability to the established and undisputed facts. The movant must, convince the court that the proper legal standard, as applied to that set of facts, does not support the verdict as a matter of law. Boyle v. United Technologies Corp., 487 U.S. 500, 513-14 (1988) (citing St. Louis V. Praprotnik, 485 U.S. 112, 118-120 (1988) (plurality opinion)); Ebker v. Tan Jay Int'l Ltd., 739 F.2d 812, 825-26 n.17 (2d Cir. 1984) (Friendly, J.); and 9 C. Wright & A. Miller, Federal Practice and Procedure § 2537, pp. 599-600 (1971)); Structural Rubber Prod. v. Park Rubber Co., 749 F.2d 707, 717, 223 USPQ 1264, 1271-72 (Fed. Cir. 1984); Dana Corp. 860 F.2d at 417-18, 8 USPQ2d at 1694-95. On appeal, to determine the correctness of the district court's ruling on JMOL, the

appellate court applies the JMOL standard anew to the issues presented by the appeal. Read Corp., 970 F.2d at 821, 23 USPQ2d at 1431. See also, Newell Cos. v. Kenney Mfg. Co., 864 F.2d 757, 762, 9 USPQ2d 1417, 1421 (Fed. Cir. 1988), cert. denied, 493 U.S. 814 (1989).

Where an ultimate issue of law based on underlying disputed facts, e.g. obviousness of a patent, is submitted to a jury, our precedent holds that the same standard applies. *Jurgens* v. *McKasy*, 927 F.2d 1552, 1557, 18 USPQ 1031, 1035 (Fed. Cir. 1991).

### Ш.

### VALIDITY

I dissent from the assignment of the issue of validity to a panel for decision. The Supreme Court has clearly stated that between infringement and validity, "validity has the greater public importance." Cardinal Chemical Co. v. Morton Int'l, Inc., 113 S. Ct. 1967, 1977, 26 USPQ2d, 1721, 1729 (1993); Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 330 (1945). In my view, the in banc court should resolve the important issues raised herein respecting the trial of validity issues before a jury. Our precedent is unclear, if not conflicting.

## A. Right to a Jury Trial

The defendant Warner-Jenkinson raised the defense of invalidity of the '746 patent on various statutory grounds. Over the objection of Warner-Jenkinson, these issues were submitted by "special verdicts" to the jury with general

instructions on the law applicable to the legal questions. The jury returned with verdicts inter alia that claims 1, 2, 3, 13, and 14 were not proved invalid on any of the asserted grounds, namely (1) that the claimed invention would not have been obvious within the meaning of § 103; (2) that employees of Osmonics, rather than the named inventors, Drs. Cook and Rebhahn, invented all or a portion of the claimed invention (see § 102); and (3) that the inventors did not violate § 112 by failing to disclose a better mode of carrying out the invention than that set forth in the specification of the patent. Each of these issues is one of law, not fact, although based, of course, on underlying facts. The trial court denied Warner-Jenkinson's renewed motion for JMOL on these issues.

On appeal, Warner-Jenkinson argues that the validity of a patent is an issue of law, and that a new trial is required because the jury resolved the questions of obviousness, best mode, and inventorship, all of which are questions of law to be decided by the judge. I agree that Hilton Davis had no constitutional right to a jury trial on these issues for the reasons set out in my opinion in a case on which the Supreme Court has granted certiorari. In re Lockwood, 30 USPQ2d 1292 (Fed. Cir. 1994), vacated, reh'g granted, and reh'g in banc denied, 50 F.3d 966, 33 USPQ2d 1406 (1995), 33 USPQ2d 1907 (Fed. Cir. 1995) (Nies, J., dissenting from denial of rehearing in banc), cert. granted sub nom. American Airlines. Inc. v. Lockwood, 115 S. Ct. 2274 (1995). Essentially, validity is an issue of law because patent rights are public rights, not private rights, and historically cancellation of a patent for invalidity was an equitable remedy. It is also my understanding that the denomination of an issue as one of law means that the judge resolves any factual issues, not the jury. St. Louis v. Praprotnik, 485 U.S. 112, 124-126 (1988) (plurality). I will limit my analysis to the obviousness issue.

The right to a jury trial on validity is critical to determining trial procedures and the standard for appellate

The trial court opined, "Certainly if the Federal Circuit desires, they can instruct the District Courts of the country how to try patent cases to a jury in this vehicle if they choose to do so." We have left it in a mess. I would require at least instructions on what facts are in dispute, as was done historically. The instructions in early jury trials were fact specific. See Appendix to Validity.

review. Prior to the creation of this court, the other circuits were in conflict on the issue of how to treat the ultimate question of obviousness. Some circuits considered obviousness a question of law for the court. Julie Research Lab., Inc. v. Guildline Instruments, Inc., 501 F.2d 1131, 1135-36, 183 USPQ 1, 4-5 (2nd Cir. 1979) ("The ultimate decision of invalidity/validity for obviousness/ nonobviousness is one law."); Blohm & Voss AG v. Prudential-Grace Lines, Inc., 489 F.2d 231, 245, 180 USPQ 165, 176 (4th Cir. 1973) ("Thus, we come to the ultimate legal question of validity, and it is clear that it is, in the final analysis, a question of law."), cert. denied, 419 U.S. 840 (1974); Dual Mfg. & Eng'g v. Burris Indus., Inc., 619 F.2d 660, 662-663, 205 USPQ 1157, 1160-1161 (7th Cir.) (in banc) (obviousness is a question of law), cert. denied, 449 U.S. 870 (1980). At least one circuit disagreed, concluding that obviousness presented a question of fact. Plastic Container Corp. v. Continental Plastics of Oklahoma, 708 F.2d 1554, 1558, 219 USPQ 26, 29 (10th Cir. 1983) ("The Tenth Circuit treats the ultimate issue of obviousness as a question of fact subject to the 'clearly erroneous' standard of review.").

In the Ninth Circuit, a slightly different practice evolved. There, district courts were permitted to give the issue of obviousness (a question of law) to the jury, but only for an advisory verdict. Garter-Bare Co. v. Munsingwear Inc., 723 F.2d 707, 710-711, 221 USPQ 751, 753 (9th Cir.) (court, in accepting jury verdict as advisory only, acted within its right in exercising duty to determine obviousness as a matter of law), cert. denied, 469 U.S. 980 (1984); Automation Electronics Corp. v. Sanders Instruments, Inc., 704 F.2d 1133, 1134, 218 USPQ 200, 201 (9th Cir. 1983) ("Although the issue [of obviousness] may be submitted to the jury for a non-binding advisory opinion, it is the trial court's responsibility to make the final determination independent of the jury's recommendation.").

This court recently held in Lockwood, supra, that the issue of validity of a patent must be given to the jury as a matter of constitutional right. A jury may be asked only the ultimate question of obviousness and, on JMOL, the judge must presume that the jury resolved all factual disputes in favor of the verdict winner. Warner-Jenkinson objects to that procedure. I would at least hold this appeal pending the decision of the Supreme Court in the Lockwood case.

### B. Jury Instructions

Even following the *Lockwood* precedent that a jury decides the facts underlying questions of validity, I would hold that the instructions on validity in this case are fatally defective to achieve that purpose.

As an initial matter, the first step in determining validity or infringement is to interpret the claims in issue. Lemelson v. General Mills, Inc., 968 F.2d 1202, 1206, 23 USPQ2d 1284, 1287 (Fed. Cir. 1992), cert. denied, 113 S. Ct. 976 (1993). Furthermore, claims must have the same meaning and scope for both purposes. Intervet America, Inc. v. Kee-Vet Lab. Inc., 887 F.2d 1050, 1053, 12 USPQ2d 1474, 1476 (1989); Smithkline Diagnostics, Inc. v. Helena Lab. Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1471 (Fed. Cir. 1988); W.L. Gore & Associates, Inc. v. Garlock, Inc., 842 F.2d 1275, 1279, 6 USPQ2d 1277, 1280 (Fed. Cir. 1988). We have recently held as an in banc court that the district court must interpret the claims in its instructions to the jury. Markman v. Westview, 52 F.3d 967, 981-982, 34 USPQ2d 1321, 1331

<sup>&</sup>lt;sup>5</sup> This moots the question whether 35 U.S.C. § 281, providing the remedy of a "civil action" for patent infringement, provides a statutory right to a jury trial on the issue of validity.

<sup>&</sup>lt;sup>6</sup> If the *Lockwood* case is dismissed by the Supreme Court on Lockwood's pending motion, this appeal presents another vehicle for determining jury trial rights on the issue of validity. This is one of the few cases where a party has lodged proper objections.

(Fed. Cir. 1995) ("the trial court . . . should have instructed the jury as to the meaning of the claims"). The district court did not do so here. Under Markman, the error of a trial judge in failing to so instruct the jury was rendered harmless by that court's ruling on JMOL. Id. The same is not true here. Further, the district court ruled that an opinion of an "expert" on the meaning of the claim is fact evidence to be "weighed" by the jury in making their interpretation. Under Markman, such treatment of opinion testimony is improper by judge or jury. Id. at 983; 34 USPQ2d at 1332-33. The district court gave the following instruction to the jury:

The language of the Hilton Davis patent claims must be construed as it would be by those of ordinary skill in the art. In understanding the meaning of words used in the claims, you may consider the patent specification, the prosecution history of the patent, other claims of the patent, testimony of expert witnesses, the circumstances surrounding the inception of the patent application and the meaning of words as contained in technical literature which are part of the legal evidence and the state of the prior art.

This is an abdication of the court's responsibility. Without knowing the meaning given to the claim language by the jury, the correctness of a validity or infringement verdict cannot be meaningfully reviewed. The jury may simply have misconstrued the claim, for example, determining where pressure must be measured.

The special verdicts requested from the jury were not fact verdicts under Rule 49(a) of the Federal Rules of Civil Procedure. As noted in Roberts v. Sears, Roebuck

& Co., 723 F.2d 1324, 1340, 221 USPQ 504, 519 (7th Cir. 1983) (in banc):

In this case the directions of *Dual* were not followed. The verdict form utilized was "special" only in the sense that the legal issue of patent validity was broken down into the components of obviousness and anticipation. Proper special verdicts, however, are to be addressed only to the subsidiary questions of fact that compose the *Graham* tripartite inquiry upon which the legal determination of validity must rest, not to the obviousness and anticipation components of patent validity themselves.

The district court here gave instructions which treated the validity issues as ultimate facts. For example, the court instructed:

The defendant has the burden of establishing the invalidity of the patent by clear and convincing proof.

I would hold that instruction to be plain error. The issue of obviousness is a conclusion drawn after facts are established. Resolution of the facts merely brings one to the legal question, not its answer, which is a judgment call. Newell Co. v. Kenney Mfg. Co., 864 F.2d 757, 762, 9 USPQ2d 1417, 1421 (Fed. Cir. 1988) ("[W]here the only issue is, as here, the application of the statutory standard of obviousness (35 U.S.C. § 103) to an established set of facts, there is only a question of law to be resolved by the judge."), cert. denied, 493 U.S. 814 (1989). Accord Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566-67, 1 USPQ2d 1593, 1596-97 (Fed. Cir.), cert, denied, 481 U.S. 1052 (1987). A correct instruction would be that disputed facts underlying the legal conclusion of invalidity must be established by clear and convincing evidence.

The entirety of the instruction on obviousness appears as an Appendix to this section. The instructions refer to

<sup>&</sup>lt;sup>7</sup> Rule 49(a) of the Federal Rules of Civil Procedure recites in pertinent part:

<sup>(</sup>a) Special Verdicts. The court may require a jury to return only a special verdict in the form of a special written finding upon each issue of fact. . . .

a number of difficult concepts without tying them to any factual dispute or evidence in this case. The jury was literally put to sea without navigational aid. It was repeatedly told it was the judge of the obviousness of the invention. As an example, I quote one paragraph, which in the context of the entirety of the instructions carries the same or greater force:

To reach a proper conclusion, you must step backward in time and into the shoes worn by that hypothetical person when the invention was unknown and just before it was made. You must then determine, in light of all the legal evidence, whether the patent challenger has convincingly established that the claimed invention as a whole would have been obvious at the time to that hypothetical person.

The instructions on obviousness could only have been gibberish to a lay jury. The instructions did not tell the jury what fact issues, if any, were in dispute which the jury must decide. An appellate court cannot provide proper appellate review on the basis of such general instructions. See Roberts, 723 F.2d at 1341, 221 USPQ at 519 (requiring instructions setting forth mandatory alternative verdicts).

These examples are sufficient to show that the instructions and special verdicts on validity issues in this case are fatally flawed. The ultimate decision on the validity of a patent should not be thrown into the black box of a jury to be reviewed under the substantial evidence standard. Structural Rubber, 749 F.2d at 718, 223 USPQ at 1272. If the judge decides that resolution of a particular fact issue settles the validity question, the judge needs to direct the jury to decide that fact issue in a special verdict

or must give mandatory alternative verdict instructions. As the *Roberts* court stated:

[A] compulsory instruction must be given when a general verdict is utilized: "[I]t is the court's duty to instruct the jury that it should return one verdict if the facts are found one way and a different verdict if the facts are found otherwise." [Panther Pumps & Equipment Co. v. Hydrocraft, Inc., 468 F.2d 225, 175 USPQ 577 (7th Cir. 1972), cert. denied, 411 U.S. 965 (1973).] In other words, the jury must be instructed that if it finds facts A, B, C, and D, it must render a certain verdict. Anything less than strict adherence to this procedure by a trial court constitutes an abdication of its active duty to retain ultimate control over the issue of obviousness.

Roberts, 723 F.2d at 1341, 221 USPQ at 519. Here, there were no such instructions given. Meaningful review where there are material issues of fact is impossible. Structural Rubber, 749 F.2d at 723, 223 USPQ at 1276. Such error can be corrected only by a new trial. From the instructions in this case, it cannot be determined whether the jury decided against the defendant on the factual issues or the legal issues.

The trial court's ruling on the JMOL motion compounds the problem by its legally erroneous interpretation of the claim. The judge repeatedly stated that the inventors conceived a special process which skipped the salting out process and produced FDA certified quality dye, and determined obviousness on that basis. The claims do not require skipping the salting out step or producing FDA certifiable dye. Thus, the court's basis for distinguishing over the prior art is legally erroneous. Further, the court itself considered as evidence and relied on the legal opinion of a proffered expert witness [Dr. Kinman] that the invention was not obvious over prior art. This was error. Mendenhall v. Cedarapids, Inc., 5 F.3d

<sup>\*</sup>In Structural Rubber, there was no objection, as here, to trial of validity by either party. I would follow Structural Rubber where trial is to a jury by right or by agreement. 749 F.2d at 722-724, 223 USPQ at 1275-1277.

1557, 1574, 28 USPQ2d 1081, 1096 (Fed. Cir. 1993), cert. denied, 114 S. Ct. 1540 (1994). The error in giving the issues of validity to the jury were not rendered harmless by the court's ruling on JMOL. Because of erroneous instructions, a new trial is required.

#### C. Conclusion

The judgment that the '746 patent was not invalid cannot stand. Regardless of what conclusion one might reach on the merits of the hotly contested issue of validity, particularly obviousness in view of Osmonics' work and publications before testing for either party, the more important question is: Was this issue properly tried? I dissent to the denial of in banc to resolve the jury trial issues raised by this appeal.

#### APPENDIX TO VALIDITY

Jury Instructions On Obviousness in this Case

A patent granted by the Patent and Trademark Office is invalid if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the pertinent art at the time the patented invention was made. Patentability shall not be negatived by the manner in which the invention was made.

In determining obviousness of the claimed subject matter of each of the claims of the patent in suit, the following steps should be taken by you: One, you should determine the scope and content of the prior art relied upon against the patent in suit. Two, you should then identify the difference, if any, between each claim of the patent in suit and the prior art. And three, you should determine the level of ordinary skill in the pertinent art at the time the invention of the patent in suit was made.

You must make each of the determinations as to [sic] of the time the Hilton Davis invention was made.

You should consider such secondary considerations as commercial success, long-felt but unresolved need, failure of others to solve the problem and acquiescence in the patent by others.

The defendant Warner-Jenkinson must prove invalidity because of obviousness by clear and convincing legal evidence.

During the course of this trial you have heard the term "prior art" used frequently. One of Warner-Jenkinson's assertions in this case is that there were certain prior public disclosures which constitute prior art within the meaning of the law. The term "prior art" includes that which was: One, known or used by others in this country before the date of invention by inventor; or

Two, patented or described in a printed publication in this or a foreign country before the date of invention; or

Three, patented or described in a printed publication in this or a foreign country for more than one year prior to the date of the application herein; or

Four, publicly used or on sale in this country more than one year prior to the date of the application therefor; or

Five, made or built by another person before the date of the invention where the thing made or built was not abandoned, suppressed or concealed.

The scope of the prior art is defined as that reasonably pertinent to the particular problem with which the inventor was involved.

I previously instructed you that when the United States Patent Office grants a patent it is presumed that the patent examiner is correct. If a patent challenger contends that a patent is invalid but relies only upon the same prior art that the examiner considered in granting the patent, he asserts that the examiner was wrong, and the

presumption requires that he prove this by clear and convincing legal evidence.

If the patent challenger relies only on prior art, which is not more pertinent or relevant than the art considered by the examiner, then such challenger must also prove invalidity by clear and convincing legal evidence.

If the patent challenger relies upon prior art which was not considered by the examiner, and which is more pertinent than that which was considered, then invalidity must still be proved by clear and convincing legal evidence, however, the patent challenger may have an easier time doing so.

In determining whether or not the claims of the patent in suit would have been obvious at the time, it is not necessary that there be absolute predictability of the result. It is only required that there be a reasonable probability the beneficial result will be achieved to show obviousness.

In reaching your determination on the issue of obviousness, you should consider whether the subject matter of the invention was also developed independently by other persons either before the alleged inventors of the patent in suit or about the same time.

It is fundamental in patent law that one who applies a known process to a known chemical does not thereby invent an unobvious patentable process unless it produces a different or an unexpected result over the prior art. If you find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the process contained in the patent was an existing process, that plaintiff simply applied it to an existing chemical for ultrafiltration, and that the process failed to produce a different or unexpected result over the prior art, then you must find that the patented process is obvious and that the plaintiff's patent claims are invalid.

There have been frequent references to a person having ordinary skill in the art. Such a person is only hypothetical. It is that person who is presumed to be aware of all the pertinent prior art. The actual inventor's skill is irrelevant to the inquiry. A person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art.

To reach a proper conclusion, you must step backward in time and into the shoes worn by that hypothetical person when the invention was unknown and just before it was made. You must then determine, in light of all the legal evidence, whether the patent challenger has convincingly established that the claimed invention as a whole would have been obvious at the time to that hypothetical person.

You are also to determine the level of ordinary skill in the art to which the claimed invention pertains at the time the claimed invention was made. Factors to be considered in determining the level of ordinary skill in the pertinent art are: The educational level and years of experience of the person or persons who you find to have developed the processes that are the subject of this case and of others working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents, and publications of other persons or companies, and the sophistication of the technology.

One of the considerations of obviousness is the difference between the pertinent prior art and the claims of the Hilton Davis patent. You must consider the claimed invention as a whole.

The differences may seem slight, but it may also have been the key to success and advancement in the art resulting from the invention.

#### Author's Note

Instructions in early jury trials were directed to the particular case, not to legal abstractions. See, e.g., Coupe v. Royer, 155 U.S. 565, 570-573 (1895); Johnson v. Root, 13 Fed. Cas. 823 (Cir. Ct. D. Mass. 1858); Serrell v. Collins, 21 Fed. Cas. 1085 (Cir. Ct. S.D.N.Y. 1857); Page v. Ferry, 18 Fed. Cas. 979 (Cir. Ct. E.D. Mich. 1857).

IV.

#### INFRINGEMENT

## A. Equivalents Under the Patent Act of 1952

"When all else fails, read the statute." One cannot improve on this advice from a law school professor, now long deceased. The only reference to equivalents in the Patent Act of 1952, the current statute, appears in 35 U.S.C. § 112. As will become evident, this part of the statute reflects one facet of the judicially created doctrine of equivalents and it was the only part enacted into law by Congress. Section 112 reads in pertinent part (hereinafter § 112, ¶ 6):

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. [Emphasis added.]

If a patentee chooses to draft a claim in other form, it is reasonable to conclude Congress intended that the pat-

entee should be bound by the literal language of the claim. In view of the liberality in current claiming practice, the need for the doctrine of equivalents because of difficulties in drafting claims to cover an invention in all possible forms is a rare case. If the invention can be claimed under § 112, ¶ 6, it should be so claimed so as to give notice that the inventor claims equivalents.<sup>30</sup>

In addition, the application of the doctrine of equivalents to a specific claim is suspect because of the statutory requirements enacted in 1952 for obtaining a broadened reissuance of a patent, which were much stricter than under prior statutes. Section 251 provides that a patentee seeking to broaden the claims of its patent must file for reissue within two years of the patent's issuance. Moreover, under § 252, the period of protection is prospective only for the balance of the original term, not retroactive to the date of issuance of the patent, with respect to activities which do not infringe a claim in the original patent. Competitors are, thus, protected from liability for damages for infringement of claims broadened on reissue by provisions recognizing their "intervening rights." P. J. Federico, Intervening Rights in Patent Reissues, 30 Geo. Wash. L. Rev. 603-637 (1961-62) (discussing intervening rights generally). This rational balanced system provided by Congress is undermined by the judicially created doctrine of equivalents. To draw a parallel to reissue, the asserted claims of the '746 patent must be broadened to capture the accused process here; these claims are broadened more than two years after issuance of that patent; and no intervening rights are provided for the innocent user of the broadened claims.

The patentee is much better off evading the reissue procedure which Congress has provided, and resorting

The Department of Justice objected stating: "The section further introduces into the statute for the first time the controversial doctrine of equivalents without defining its scope." Patent Law Codification and Revision: Hearings on H.R. 3760 Before Subcommittee No. 3 of the Committee on the Judiciary, 82nd Congress, 1st Sess. p. 95, (1951) (statement of T. Hayward Brown, Chief, Patent Litigation Unit, Claims Divisions, Department of Justice).

<sup>10</sup> Section 112, ¶ 6 does not cover single element claims. Special consideration may attend infringement by equivalents in such cases.

to its counterpart, the doctrine of equivalents, created out of the judiciary's sense of "fairness." If we are to persist in an extra-statutory remedy, it should be as fair to both sides as that provided in the statute.

Prior to the current statute, the judiciary created broadened reissues of a patent extra-statutorily as a matter of fairness to patentees, Miller v. Brass Co., 104 U.S. 350, 354 (1881), and later had to create the doctrine of intervening rights in fairness to infringers who had no notice in the time period between issuance and reissuance that their conduct would be held infringing. Sontag Chain Stores Co. v. Nat'l Nut Co., 310 U.S. 281, 293-294 (1940). Congress then amended the statute in 1952 to incorporate both "fairness" parts for broadened reissues.

Today, the doctrine of equivalents is as unfair as broadened reissues of patent without intervening rights. Having created an extension of protection of a claim by the doctrine of equivalents, the judiciary should take it upon itself to establish intervening rights similar to those for claims changed on reissue. The absence of intervening rights has not been frozen statutorily. The doctrine is not in the current statute at all except in § 112 ¶ 6. At a minimum, damages should be limited.

## B. Infringement By Equivalents Under Graver II

Inasmuch as I stand alone in advocating a straightforward interpretation of the current statute, I must accept, as I have in the past, that the doctrine of equivalents as enunciated in *Graver II*, continues to be viable. However, the *Graver II* doctrine was, in any event, misapplied in this case.

The jury was instructed:

Hilton Davis asserts that the Warner-Jenkinson process for making food dyes infringes the Hilton Davis patent under the doctrine of equivalents. The doctrine of equivalents exists to prevent a fraud on the patent.

The concept of the doctrine of equivalents is designed to protect the patent holder from an unscrupulous infringer who appropriates the invention but avoids the literal language of the claims. In this regard, consideration must be given for the purpose for which a step is used in the claims of the patent and in defendant's processes and the functions which they perform.

You may find infringement under the doctrine of equivalents when the accused process and the claimed invention perform substantially the same function in substantially the same way to yield substantially the same result even though the processes differ in name, form or shape.

Hilton Davis must prove infringement under the doctrine of equivalents by a preponderance of the legal evidence.

Though application of the doctrine of equivalents extends the protection of the patent beyond the literal words contained in the claims, it is not proper to erase the meaningful limitations of the claims on which the public is entitled to rely in avoiding infringement, and you must look to the claims section of the patent to determine the coverage and limitations of the patent.

The doctrine of prosecution history estoppel precludes a patent owner from obtaining a claim construction through the application of the doctrine of equivalents that would resurrect subject matter surrendered during prosecution of a patent application. That is not to say, however, that whenever a limiting amendment or argument is made during prosecution, the patent owner loses all coverage between what the claims literally cover and what they would have covered prior to the amendment or argument. A close examination must be made as to, not only what was surrendered, but also the reason for such a surrender. The fact that claims were narrowed does not always mean that a patent owner is completely prohibited from recapturing some what was originally claimed. Depending on the nature and purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero. Determination of the effect on the doctrine of equivalents from actions taken before the PTO requires consideration of the nature of such actions, the reasons therefore, the prior art distinguished, and the examiner's objection thereby overcome.

A patent owner cannot obtain, under the doctrine of equivalents, coverage which could not have been obtained from the PTO by literal claims. In making this determination, you should consider whether the Hilton Davis patent claims as a whole, when interpreted to cover the Warner-Jenkinson's processes, "read on" the prior art.

The district court entered judgment on the jury's verdict of infringement and denied a JMOL motion. The majority approves the instructions as the sum and substance of the doctrine of equivalents, relying on closing argument of counsel to flesh them out to include the test it adopts of limiting infringement to "insubstantial" changes, a test not in the instructions. Nothing can save these instructions, least of all attorney argument. If nothing else, the district court told the jury that it must apply the law as stated in the court's instructions.

The doctrine of equivalents is a much more complex concept than that set out in the jury instructions or in the majority opinion. The doctrine is comparable to the concept of determining fair use of a copyrighted work. The majority opinion recognizes some of the complexity but approves utter simplicity. The majority speaks of various factors that are important in finding infringement

by equivalency, but none of the restraints it suggests made it into the jury instructions. Warner-Jenkinson's wholly independent development of its process, for example, appears nowhere. Nor does the majority take them into account in affirming the judgment in this case.

The majority's analysis of infringement under the doctrine of equivalent does not "restate" the Supreme Court standard. The majority in banc has "revised" the doctrine to eliminate the legal safeguards that Supreme Court precedent had built into the doctrine's application to protect the public from unknowable infringement as here. Securing rewards to patentees may not override due process. Yet, the public's right to reasonable notice of prohibited conduct surfaces nowhere in the majority opinion. Contrary to the majority, the Supreme Court placed clear limitations on the legal scope of protection of a claim under the doctrine. As now defined by this court, a doctrine which rests on fairness has been made wholly arbitrary. The majority holds, first, that a patent inherently covers equivalents of the product or process regardless of how the invention is described in the specification or claim and, second, that infringement depends on finding as a fact that the changes in the accused product or process are "insubstantial."

From a review of Supreme Court precedent covering the doctrine under the predecessor statute, the determination of the scope of protection involves a judgment call by the district court that the words of the claim should or should not be controlling. The scope of a claim may be broader or narrower or the same as the words of a claim. But the scope can never be broader than the invention. That decision is, as Judges Plager and Lourie state, based in part on the equities but, in the past, the conclusion was not only made by the judge in equity but also at law. But whether made at law or in equity, the ultimate conclusion that the doctrine applies to a set of established facts has been subject to plenary review on appeal, as in Graver II.

Applying these principles to the present case, the district court erred in not determining the meaning and scope of the claim in suit. The question of scope is whether one of skill in the art would understand that a specific element of the claim is not the only means that may be used in the claimed invention. The answer depends on the nature of the invention, the claim language, the description of the invention in the specification, other claims in the patent, the arguments and amendments made during prosecution, the obviousness of the change, the prior art, the alleged infringer's own conduct, and any other circumstances from which notice that the literal words of the claim are not meant to control might be inferred. In addition to the court's determination of the range of equivalent components, the fact question of equivalency carries restrictions: (1) the doctrine of equivalents may not be used to enlarge a claim; infringement requires that every limitation of a claim must be met by at least an equivalent substituent in the accused product or process; (2) legal equivalency of a substituent is established by the knowledge in the art at the time the patent is issued, and (3) the substituent must perform essentially the same function as the element which it replaces so that overall the accused product or process and the claimed invention can be said to operate by substantially the same means to achieve the same or substantially the same result. These restrictions must be part of the jury instructions.11

The majority entirely omits the step of determining whether, as a matter of law, an element of the claim extends to equivalents, a requirement of the Supreme Court after 1870. It contorts the doctrine to overall equivalency

to the claimed invention and further states that equivalency is found as of the time of the infringement. "Known" equivalency of a substituent at the time of the patent's issuance is no longer a requirement. Further, the finding of infringement is entirely a question of fact. With these departures from Supreme Court precedent, the doctrine has lost its moorings. I disagree with the majority's analysis. In particular, I conclude that infringement under the doctrine of equivalents under Graver II, like the doctrine of fair use of copyrighted works, involves mixed questions of law and fact.

Prior Federal Circuit precedent has taken a generous view of the doctrine, making infringement by equivalents the automatic second step when literal infringement is not proved, as the majority reaffirms today.18 In addition, old and newly developed equivalents of an invention are covered by a claim even for an invention which was not a pioneer. Hughes Aircraft v. United States, 717 F.2d 1351, 212 USPO 473 (Fed. Cir. 1983). Further, in Hughes, we engrafted the doctrine upon claims drafted in accordance with § 112, ¶ 6 leading to a bizarre interpretation of the statute. We now have literal equivalents and nonliteral equivalents of claim elements. See, e.g., Johnston v. IVAC Corp., 885 F.2d 1574, 1577, 1580-81, 12 USPQ2d 1382, 1386-1387 (Fed. Cir. 1989). We have made the infringement analysis so convoluted it is impossible for most district court judges untrained in "patentese" to follow, much less jurors. At least today's decision makes it simple—give the entire question of infringement under the doctrine to the jury under instructions which place

<sup>&</sup>lt;sup>11</sup> I leave open the question whether infringement can extend to a later developed substituent under § 112, ¶ 6. If so, there should be some restraint, such as, that one of skill in the art would find it obvious to make the change. This is not part of the *Graver II* test which limited legal equivalents to pre-issuance knowledge of equivalency.

<sup>12</sup> See Harper & Row Publishers, Inc. v. Nation Enters., 471 U.S.
539, 560 (1985); Fisher v. Dees, 794 F.2d 432, 436, 230 USPQ 421,
424 (9th Cir. 1986); Maxtone-Graham v. Burtchaell, 803 F.2d
1253, 1258-59, 231 USPQ 534, 538 (2nd Cir. 1986).

<sup>13</sup> The attempts by some judges to restrain it (see, e.g., London v. Carson Pirie Scott & Co., 946 F.2d 1534, 20 USPQ2d 1456 (Fed. Cir. 1991)) have now been rejected.

the vaguest restraints on infringement by equivalency. I agree that a change should be made but not in that direction.

## C. Historical Perspective

What is the "Doctrine of Equivalents"? What makes the doctrine so contentious? Simply stated, despite the statutory provisions that define infringement as the unauthorized making, using, or selling of a patented invention (35 U.S.C. § 271), and that require the inventor to "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention" (§ 112, ¶ 2), infringement may or may not be restricted under our jurisprudence to what the inventor sets out in the claims which define his invention. But with the extension of the legal protection for a patented invention beyond the literal words of the claims, the public's right to notice of what conduct is forbidden by a patent is compromised. How to balance these conflicting interests under the current statute and Patent Office procedures is a question the Supreme Court has not addressed.

## 1. Origin of the Doctrine

A review of the origins of the doctrine of equivalents is not merely interesting "filler" in this opinion. A prior decision respecting the doctrine of equivalents cannot be properly understood if the decision is divorced from the statutory and judicially imposed requirements for claim specificity, from examination procedures in the Patent Office applicable at the time to the patent in issue, and from the legal terminology of the period.

No mention of "claims" appears in the Act of 1790 or Act of Feb. 21, 1793, Ch. 11, 1 Stat. 318, and there was no procedure for administrative examination to determine patentability of an invention. Under these statutes, the invention merely had to be described so as to "distinguish [it from] other things before known" and "in the case of

a machine [to explain] the principle by which it may be distinguished from other inventions." See Karl B. Lutz, Evolution of the Claims of U.S. Patents, 20 J. Pat. Off. Soc'y 134 (Feb. 1938), 20 J. Pat. Off. Soc'y 377 (Apr. 1938), 20 J. Pat. Off. Soc'y 457 (May 1938). One who used the "essence" of the invention was an infringer. See Odiorne v. Winkley, (No. 10,432) 18 F. Cas. 581 (C.C. Mass., 1814).

Recognizing that the public should be informed by the patent document itself as to what was prohibited to them, the Supreme Court expressed a need "to put the public in possession of what the party claims as his own invention so as . . . to guard against prejudice or injury from the use of an invention which the party may otherwise innocently suppose not to be patented." See Evans v. Eaton, 20 U.S. (7 Wheat.) 356, 434 (1822).

In response to such judicial direction, the requirement for a claim to an invention first appeared in the Act of 1836. However, as interpreted by the Supreme Court, a claim under the 1836 Act did not limit the scope of protection. Under this claiming system, and there was generally only one claim, infringement continued as before to cover variations of the described embodiments. In essence, one continued to infringe the general description of the invention in the specification, not the specifics of the claim. See Ronald D. Hantman, Doctrine of Equivalents, 70 J. Pat. & Trademark Off. Soc'y 511, 516-37 (1988). In O'Reilly v. Morse, 56 U.S. (15 How.) 62, 123 (Jan. 30, 1853), the Supreme Court explained:

<sup>14</sup> Section 6 of the statute recited, in pertinent part, that the inventor "shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery." Patent Act of 1836, Ch. 357, 5 Stat. 117. A typical claim was a catalog of selected elements without explanation of how they interacted, merely followed by words such as "constructed and adapted to operate substantially as set forth." Ridsdale Ellis, Patent Claims, § 6 (1949).

It is a well settled principle of law, that the mere change in the form of the machinery (unless a particular form is specified as the means by which the effect described is produced) or an alteration in some of its unessential parts; or in the use of known equivalent powers, not varying essentially the machine, or its mode of operation or organization, will not make the new machine a new invention. It may be an improvement upon the former; but that will not justify its use without the consent of the first patentee. [Emphasis added.]

The "well settled" principle of law there stated was not only a test for determining whether an accused device was an infringement, but also a test for determining whether a patent was valid. Indeed, the doctrine of equivalents originated as a test for patentability. If the patented invention substituted a known equivalent for an element in a known process or product, merely varied the shape of a known product, or made other immaterial variations, the alleged invention was held to lack "invention", being "anticipated". Concomitantly, one did not avoid infringement by a mere change in form, by the substitution

of a known equivalent element in a patented combination, or by leaving out a "nonessential" part from a patented invention. Prouty v. Draper, Ruggles & Co., 41 U.S. (16 Pet.) 336 (1842) (infringement); Evans v. Eaton, 16 U.S. (3 Wheat.) 454 (1818) (validity).

The conflict over the legitimacy of the doctrine as a test for infringement first surfaced in Winans v. Denmead, 56 U.S. (15 How.) 330 (1853), a 5-4 decision of the Supreme Court. The split in Winans was prompted by the Justices' differing interpretations of the statutory requirement that a claim to an invention be made in a patent. The claim of the Winans patent was directed to coal cars which were shaped "in the form of a frustum of a come substantially as herein described." The party charged with infringement used an octagonal shape instead of a circle. The majority held:

It is generally true, when a patentee describes a machine, and then claims it as described, that he is understood to intend to claim, and does by law actually cover, not only the precise forms he has described, but all other forms which embody his invention; it being a familiar rule that, to copy the principle or mode of operation described, is an infringement, although such copy should be totally unlike the original in form or proportions.

Patentees sometimes add to their claims an express declaration to the effect that the claim extends to the thing patented, however its form or proportions may be varied. But this is unnecessary. The law so interprets the claim without the addition of these words. The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it, varying its form or proportions.

<sup>18</sup> Until 1952, the statutory test for patentability was "invention." R.S. § 4886. The term "anticipation" carried a broad meaning until the Patent Act of 1952. 66 Stat. 792. See, e.g., Yale Lock Mfg. Co. v. Greenleaf, 117 U.S. 554, 559 (1886) (claim "anticipated" because change over prior art device "would occur to rudest and most unskilled mechanic"); Yale Lock Mfg. Co. v. Sargent, 117 U.S. 536, 545-547 (1886); Hotchkiss v. Greenwood, 52 U.S. (11 How.) 248, 268-69 (1850); The Corn-Planter Patent, 90 U.S. (23 Wall.) 181, 220 (1874) (reviewed machines of different construction for anticipation).

As we have previously noted in Argus Chem. Corp. v. Fibre Glass-Evercoat Co., 759 F.2d 10, 14 n.5, 225 USPQ 1100, 1102 n.5 (Fed. Cir.), cert. denied, 474 U.S. 903 (1985), the current meaning of "anticipation" is different. "Anticipation" now carries a narrower meaning, namely, that the invention lacks novelty. Under the current statute, any differences from a prior art device would be analyzed for "obviousness." 35 U.S.C. § 103. Graham v. John Deere, 383 U.S. 1 (1966).

<sup>16</sup> See Hantman, supra.

And, therefore, the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms.

Id. at 342-43 (emphasis added).

Four Justices, in vigorous dissent, voiced a contrary view of the effect of the statutory claim requirement:

The patentee is obliged, by law, to describe his invention in such full, clear, and exact terms, that from the description the invention may be constructed and used. Its principle and modes of operation must be explained; and the invention [sic] shall particularly "specify and point" out what he claims as his invention. Fulness, clearness, exactness, preciseness, and particularity, in the description of the invention, its principle, and of the matter claimed to be invented, will alone fulfil the demands of Congress or the wants of the country. Nothing, in the administration of this law, will be more mischievous, more productive of oppressive and costly litigation, of exorbitant and unjust pretensions and vexatious demands, more injurious to labor, than a relaxation of these wise and salutary requisitions of the act of Congress. In my judgment, the principles of legal interpretation, as well as the public interest, require, that this language of this statute shall have its full significance and import.

Id. at 347.

The divergent views of the Justices in Winans are reiterated in the majority and dissenting opinions in Graver II, almost a hundred years later. The century-old debate over the function of patent claims has become crystallized under the rubrics of "central" claiming and

"peripheral" claiming. As explained in Ellis, supra note 14, at § 4:

There are two general methods of defining an invention—central definition and peripheral definition. Central definition involves the drafting of a narrow claim setting forth a typical embodiment coupled with broad interpretation by the courts to include all equivalent constructions. Peripheral definition involves marking out the periphery or boundary of the area covered by the claim and holding as infringements only such constructions as lie within that area.

The majority in Winans endorsed central claiming, subordinating the claim to the fuller description and the drawings of the invention contained in other parts of the patent. As under earlier statutes, one infringed the material parts of the invention "as described" in the specification. A claim was treated essentially as a preferred embodiment of the invention. It continued to be left to the courts to sift through the entirety of the patent description to determine what were the material elements embodying the "principle" or "essence" of the invention for both validity and infringement purposes.<sup>17</sup> Even under

Throughout this period, patentability was treated as a question of fact in equity and at law. See, e.g., Tucker v. Spalding, 80 U.S. (13 Wall.) 453, 455 (1871) (jury trial); Bischoff v. Wethered, 76 U.S. (9 Wall.) 812, 814 (1869) (jury trial); Gill v. Wells 89 U.S. 1 (1874) (jury trial on validity of reissue); Battin v. Taggert, 58 U.S. (17 How.) 74, 85 (1854) (jury trial); Cochrane v. Deener, 94 U.S. 780, 783 (1876) (equity); Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 539 (1870) (equity); 3 William C. Robinson, The Law of Patents, § 1075 (1890).

That is no longer true under the current statute. Under the Patent Act of 1952, the Supreme Court has definitively ruled that "validity of a patent is a question of law." Graham v. John Deere Co., 383 U.S. 1, 17 (1966) (specifically adopting the view of the concurring opinion in Great Atlantic & Pacific Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 155, 87 USPQ 303, 307 (1950)). See also Sakraida v. Ag Pro, Inc., 425 U.S. 273, 280 (1976) ("The

this system, the construction of the patent claim was a matter of law exclusively for the court. Bischoff v. Wethered, 76 U.S. (9 Wall.) 812, 816 (1870); Turrill v. Railroad Co., 68 U.S. 491, 509-511 (1863); Winans v. New York & Erle R.R. Co., 62 U.S. (21 How.) 88, 100 (1859); Silsby v. Foote, 55 U.S. (14 How.) 218, 225 (1852); Hogg v. Emerson, 47 U.S. (6 How.) 437, 484 (1848).

The amendment of the patent statute by the Act of 1870,<sup>18</sup> while a small language change, was interpreted to effect a major change from central to peripheral claiming, or at least a modified form of peripheral claiming. Claim language counted but certain equivalents of specified components of the claim might be recognized in determining infringement. In *Union Water-Meter Co.* v. *Desper*, 101 U.S. 332, 337 (1879), the Court explained:

Our law requires the patentee to specify particularly what he claims to be new, and if he claims a combination of certain elements or parts, we cannot declare that any one of these elements is immaterial. The patentee makes them all material by the restricted form of his claim. We can only decide whether any part omitted by an alleged infringer is supplied by some other device or instrumentality which is its equivalent.

This view represented a clear departure from earlier case law. The courts were relieved by the "distinct" claiming requirement of the 1870 Act from sorting out "material" elements of an invention. Henceforth, that was done by what the inventor specified in the claims. All elements of a claim are "essential" or "material." This development coincided with the development of substantive examination of patent applications by a corps of technical examiners in the Patent Office. The claim language became the focus of examination. As held in Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278-79 (1877):

If the patentees have not claimed the whole of their invention, and the omission has been the result of inadvertence, they should have sought to correct the error by a surrender of their patent and an application for a reissue. They cannot expect the courts to wade through the history of the art, and spell out what they might have claimed, but have not claimed. ... This duty is now cast upon the Patent Office. There his claim is, or is supposed to be, examined, scrutinized, limited, and made to conform to what he is entitled to. If the office refuses to allow him all that he asks, he has an appeal. But the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office, or the appellate tribunal to which contested applications are referred. When the terms of a claim in a patent are clear and distinct (as they always should be), the patentee, in a suit brought upon the patent, is bound by it. Merrill v. Yeomans, 94 U.S. 568. He can claim nothing beyond it. But the defendant may at all times, under proper pleadings, resort to prior use and the general history of the art to assail the validity of a patent or to restrain its construction. The door is then opened to the plaintiff to resort to the same kind of evidence in rebuttal; but he can

ultimate test of patent validity is one of law."); Lear, Inc. v. Adkins, 395 U.S. 653, 676 (1969) (remanding so that Lear can argue invalidity "to the California courts in the first instance."); Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566-67, 1 USPQ2d 1593, 1596 (Fed. Cir.), cert. denied, 481 U.S. 1052 (1987) ("Like all legal conclusions, that under § 103 rests on a factual evidentiary foundation.").

<sup>&</sup>lt;sup>18</sup> Act of July 8, 1870, Ch. 230, 16 Stat. 198, provided that the inventor "shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery" (emphasis added). This statute, with some amendments not pertinent here, remained in effect until 1952.

never go beyond his claim. As patents are procured ex parte, the public is not bound by them, but the patentees are. And the latter cannot show that their invention is broader than the terms of their claim; or, if broader, they must be held to have surrendered the surplus to the public.

See also White v. Dunbar, 119 U.S. 47, 50-52 (1886) (claim may not be enlarged by the "objective of the invention"); James v. Campbell, 104 U.S. 356, 370 (1881).

In addition to the requirement of distinct claims, the Act of 1870 changed the way patent cases were thereafter tried. Jury trials virtually disappeared, not to be seen again in any numbers for over a century, indeed, until the creation of this court.19 Prior to the 1870 Act, a patentee had to sue in equity for an injunction where monetary relief was in the form of an accounting for an infringer's profits. To obtain "damages" for the patentee's own losses, the patentee also had to sue at law. The 1870 Act gave equity courts in patent infringement suits the special power to award common law damages. See Root v. Railway Co., 105 U.S. (15 Otto) 189, 205-207 (1881). Since most patentees wanted an injunction available only in equity, as well as the equity discovery procedure to aid in proof of infringement, the equity court became the forum of choice.

Another development which was to have a profound effect on patent jurisprudence was the creation of the Circuit Courts of Appeal in 1890. These courts became effectively the final arbiters in patent cases with the Supreme Court intervening generally only where the circuits

were in conflict on the validity or infringement of a particular patent. See e.g., Sanitary Refrigerator, 280 U.S. at 36. As is well known, conflict in patent law developed and persisted among the circuits.<sup>20</sup>

When these developments occurred at the end of the 19th century, distinct claiming was in its infancy and the concept was not clearly understood. Some courts embraced peripheral claiming in its most rigid literalism. Infringement was limited to the literal language of the claim so that, absent claim language which brought in equivalent components, no equivalency infringement was recognized. Typical are the statements in Fulton Co. v. Powers Regulator Co., 263 F. 578, 580-81 (2d Cir. 1920) (citation omitted):

[A] patent (i.e., a claim) can never be given a construction broader than its terms in order to cover something which might have been claimed but was not,

and in Goodrich v. Ford Motor Co., 97 F.2d 427, 430-31 (6th Cir. 1938):

The District Court invoked a literal reading of appellants' claims and held that there was no infringement. This was sound.

For a review of the few cases where infringement by equivalents was found, see Ellis, supra note 14 at §§ 49-61.

It is important to keep in mind that the claiming concept was being developed by equity judges. Equity courts

<sup>19</sup> In Blonder-Tongue Lab. v. Univ. of Illinois Found., 402 U.S. 313, 336 n.30 (1971), the Supreme Court noted that in the three year period spanning 1968-1970, only 13 of 382 patent cases going to trial were jury trials. In contrast, fiscal years 1992-1994 saw 163 of 274 patent trials being tried to a jury. See Lockwood, 50 F.3d at 980, 33 USPQ2d at 1908.

<sup>20</sup> See Report on S. 475, 75th Cong., 3d Sess., S.R. No. 1967 (1938), proposing a "Circuit Court for Patents":

Judgments of the various courts on these important issues, even in litigation involving the same patents, are in many instances divergent, contradictory, and irreconcilable, and cause confusion and conflict hurtful alike to owners and users of the inventions in controversy.

had full power to interpret and construe documents or even reform them in the interests of "equity." An equity judge with a bent for liberal protection for particular important inventions felt free to go behind the literal letter of the document to examine the overall equities between the parties. Lutz, pp. 470-71. In any event, during this era, the inventor was well advised to claim in a manner that literally encompassed equivalent components (i.e. "a spring or equivalent"; but see n.23 infra) because of the strict constructionist views of many judges, but he then ran the risk of "over-claiming" and loss of his patent. However, reissuance to claim more narrowly was always available.

The Supreme Court decisions after the 1870 Act continued to apply a doctrine of equivalents test for infringement but in a restrained form. The principle of Winans that a claim covered other forms of the invention as a matter of law whether or not the patentee added an express declaration to that effect was no longer followed. The Court required language in the claim or at least in the specification which indicated that the claim should be interpreted or construed to cover equivalents.

This restrictive view is articulated in McClain v. Ortmayer, 141 U.S. 419, 425 (1891), where the Court states:

It is true that, in a case of doubt, where the claim is fairly susceptible of two constructions, that one will be adopted which will preserve to the patentee his actual invention; but if the language of the specification and claim shows clearly what he desired to secure as a monopoly, nothing can be held to be an infringement which does not fall within the terms the patentee has himself chosen to express his invention.

Applying these familiar principles to the case under consideration, we are forced to the conclusion that the curved hook of the defendant is not an infringement of the double spring described in the plaintiff's specification and claim [even though a] single spring or hook embracing the fore wale of a collar may be equally as efficacious.

The Court treated "pioneer" inventions more generously. A typical claim during the latter part of the 19th century literally incorporated the specification into the claim and a typical question was whether the scope of protection should be *limited* to the structure disclosed in the specification. In Sessions v. Romadka, 145 U.S. 29, 31 (1892), the claim at issue read:

3. The spring catches, I, constructed and applied to the front of the body, as described, in combination with the tongues or hasps, J, on the top, when arranged to operate as set forth.

The letter references are to parts set out in the specification. In reversing on the issue of infringement, the Court stated:

In view of the fact that Taylor was a pioneer in the art of making a practical metallic trunk fastener, and invented a principle which has gone into almost universal use in this country, we think he is entitled to a liberal construction of his claim, and that the Romadka device, containing as it does all the elements of his combination, should be held an infringement, though there are superficial dissimilarities in their construction.

Id. at 45. Because of the pioneer nature of the invention, the Court concluded that the claim should not be limited by the letter references back to the specification. But see LeHigh Valley R. Co. v. Kearney, 158 U.S. 461, 469 (1895) (contra where the invention was merely an improvement).

The above cases illustrate the critical point. The scope of protection, whether liberal or narrow, was treated as

a separate question from the fact of equivalency. Under the Act of 1870, the Court continued to hold that the construction of a patent claim was an issue of law for the court alone, not the jury. Market St. Cable Ry. Co. v. Rowley, 155 U.S. 621, 625 (1895). The Court instructed the jury on the scope of the invention. Coupe, 155 U.S. at 579-80. See also Singer Co., 192 U.S. at 275; Heald v. Rice, 104 U.S. 737, 749 (1882).

In holding that the doctrine was not restricted to pioneer inventions, the Court reiterated in Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 414 (1908), that the legal effect, i.e., "construction" was a matter which courts determined:

The right view is expressed in Miller v. Eagle Mfg. Co., 151 U.S. 186, 207, as follows: "The range of equivalents depends upon the extent and nature of the invention. If the invention is broad and primary in its character, the range of equivalents will be correspondingly broad, under the liberal construction which the courts give to such inventions."

See also Westinghouse v. Boyden Power Brake Co., 170 U.S. 537, 569 (1898) (Court analyzing effect of claim language referring back to specification); Sanitary Refrigerator, 280 U.S. at 36 ("Both Circuit Courts of Appeal recognized that the [patent in suit] had some range of equivalents."); Singer Co., 192 U.S. at 285 (Court "determined proper construction" and denied "broadening of the scope of the invention" beyond express limitations).

Under the foregoing precedent, infringement depended not only on the interpretation of the words of the claims, but also upon the court's determination that the literal words of the claim should or should not control. Thus, the court determined both the meaning and scope of the claim. My reading of the Supreme Court's decisions of the era leads me to conclude that the Court generally used the word "interpret" when it was speaking of the

meaning of the words and "construe" in connection with determining protection beyond the words, that is, the "scope" of protection for the claim, as in contract law. 3 A. Corbin, Contracts § 534 (1960); 4 S. Williston, Contracts § 602 (Jaeger ed. 1961); ALI, Restatement (Second), Contracts § 226, Comment c. (Tent. Draft No. 5. Mar. 31, 1970). This distinction leads to understanding some of the niceties in the Court's analyses. However, interpretation and construction are now used interchangeably, see Markman, 52 F.3d at 976 n.6, 34 USPQ2d at 1326 n.6, and, in any event, any difference in these words is irrelevant to the issue in this case. Both the "meaning and scope" of a patent claim were treated as issues of law for the court to decide.<sup>21</sup>

Because of the narrow view of many judges respecting the legal scope of protection and, thus, the need to cover variations expressly in the turn of the century era, the numbers of claims in patents proliferated to cover variations. The Patent Office sometimes fixed the number of claims arbitrarily. It also became the practice to use broad terms so as to claim as broadly as possible. The elements in the claim were frequently described as a nonspecific "means" for performing a function. Ellis, supra note 14 at § 16. Thus, by claiming in this or a similar manner, an accused infringer could be brought under the literal claim language.<sup>22</sup>

The application of the doctrine of equivalents then took a twist. Despite the *literal* claim language expressed as a "means," (i.e., any means), infringement extended only to the structure or elements disclosed in the specification

<sup>&</sup>lt;sup>21</sup> Markman reaffirmed that the interpretation of the words of a claim is exclusively an issue of law. If Markman should be reviewed by the Supreme Court, this case presents the complementary question whether determination of the scope of the claim likewise is a question of law.

<sup>&</sup>lt;sup>22</sup> At the time, there was no statutory provision comparable to what is now § 112, ¶ 6.

as embodiments of the invention and equivalents of such structure—not to all equivalents. See, e.g., Continental Paper Bag, 210 U.S. at 412-13.23 The doctrine of equivalents was then used to determine whether

the claim should be restricted on the ground that a claim can validly cover only what the inventor discloses and equivalents thereof. In other words, so far as the patentee is concerned, the doctrine of equivalents is used negatively. It is used to narrow his claims—not to expand them.

Ellis, supra note 14 at § 49. In current "patentese," this would be called the "reverse" doctrine of equivalents, use of the doctrine to restrict infringement even though covered by the literal language of a claim. Use of the doctrine to restrict broad claims became almost the exclusive use of the doctrine. Id.

A critical decision of the Supreme Court on claiming practice was handed down in *Halliburton Oil Well Cementing Co.* v. *Walker*, 329 U.S. 1 (1946). The Court declared an invention could not be claimed by a functional "means" expression at the "point of novelty." Such language rendered the claim "indefinite" under Rev. Stat. 4888. (This ruling was overruled in the 1952 Act, now 35 U.S.C. § 112, ¶ 6 which allows any element of a claim to be expressed as a "means.")

During the 1930's and 1940's, the Supreme Court spoke frequently about the criticality of claim language so as to provide the public with notice of protected rights and to encourage innovation by others. In holding claims

invalid, the Court stated, for example, in Permutit Co. v. Graver Corp., 284 U.S. 52, 60 (1931):

The statute requires the patentee . . . to inform the public during the life of the patent of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not.

And in United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942), it stated:

A zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field.

However, the Court did not take the opportunity when presented to do away with the doctrine of equivalents, a principal cause of such uncertainty. See Martin J. Adelman and Gary L. Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 682-83 (1989). In Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126 (1942), the Court merely equivocated on the doctrine's continued viability. Concluding that, in any event, estoppel precluded a finding of infringement by equivalency, the Court stated:

Whatever may be the appropriate scope and application of the doctrine of equivalents, where a claim is allowed without a restrictive amendment, it has long been settled that recourse may not be had to that doctrine to recapture claims which the patentee has surrendered by amendment.

Id. at 136.

## 2. Legal Limitations on Infringing Equivalents

Under each of the variants of the doctrine, the Supreme Court limited the range of permissible infringing equivalents by rules and tenets of construction which provided

<sup>23</sup> Similarly, claims which set out specific components but modified by the language "substantially as set forth" were held "to import into the claim the particulars of the specification." Westinghouse, 170 U.S. at 558. Such claims are no longer sanctioned by the PTO except for designs. Similarly, expressing an element in the claim as a specific structure "or equivalent" (e.g., a gear or equivalent) is not allowed in current practice although such language is appropriate in the specification.

a measure of certainty against unknowing infringement by equivalency.

## a. Known Equivalents

. . . .

It logically follows from the original rationale of Winans that a patentee intends to claim equivalents that an inventor could not be deemed to claim what one of skill in the art did not know at the time the patent issued. Thus, the Court limited the range of infringing substitutions to those in which components were substituted which were known to be equivalents. Where the invention was an improvement on a known process or machine, the substitution had to be known in that art as an equivalent at the time the patent issued. Seymour v. Osbourne, 78 U.S. (11 Wall.) 516, 556 (1870). In Gill v. Wells, 89 U.S. (22 Wall.) 1, 28-30 (1874), the Court used the phrase "legal equivalent within the meaning of the Patent law" to identify this restriction on infringing equivalents. Equivalency-in-fact was not enough. The Court explained:

Questions of the kind usually arise in comparing the machine of the defendant in a suit for infringement with that of the plaintiff, and the rule is that if the defendant omits entirely one of the ingredients of the plaintiff's combination, without substituting any other, he does not infringe, and if he substitutes another in the place of the one omitted, which is new or which performs a substantially different function, or even if it is old but was not known at the date of the plaintiff's patent as a proper substitute for the omitted ingredient, he does not infringe.\* By an equivalent in such a case it is meant that the ingredient substituted for the one withdrawn performs the same function as the other, and that it was well known at the date of the patent securing the invention as a proper substitute for the one omitted in the patented combination.+

[I]t is clear law that the substituted ingredient cannot be regarded as a legal equivalent, within the meaning of the Patent law, unless it performs substantially the same function as the ingredient withdrawn, and was well known as such an ingredient at the date of the original patent and as a proper substitute for the ingredient which was included in the patented combination.

Gill, 89 U.S. at 28, 30 (emphasis added).

The case of Gould v. Rees, 82 U.S. (15 Wall.) 187 (1872), cited in Gill, is particularly instructive on the legal insufficiency of an equivalency-in-fact test to determine infringement. The Court held that the instructions to the jury were legally erroneous in failing to preclude certain equivalents from the ambit of infringement. Id. at 194-95. On a challenge to the instructions, the Court stated:

Unexplained, the theory assumed by the court warranted the jury in finding for the plaintiff, though the defendant in constructing his machine omitted one of the ingredients of the plaintiff's combination and substituted another in its place to perform the same function, whether the ingredient substituted for the one omitted was or was not newly discovered, or was or was not well known at the date of the plaintiff's patent as a proper substitute for the one omitted from the combination constituting the plaintiff's invention.

Tested by these principles, as the instruction in question must be, it is plainly erroneous, as it warranted the jury in finding for the plaintiff, whether

<sup>\*</sup> Carver v. Hyde, 16 Peters, 514; Brooks v. Fiske, 15 Howard, 212; Stimpson v. Railroad, 10 Id. 329; Prouty v. Ruggles, 16 Peters, 341.

<sup>+</sup> Gould v. Rees, 15 Wallace, 194.

the ingredient substituted for the one omitted was new or old, or whether the one substituted was or was not well known at the date of the plaintiff's patent as a proper substitute for the omitted ingredient.

Id. at 193-95 (emphasis added).

As indicated, the Court mandated a broader range of infringing equivalents for what it termed "primary" or "pioneer" inventions or for an invention having particular merit. Continental Paper Bag, 210 U.S. at 415; Miller V. Eagle Mfg. Co., 151 U.S. 186, 207 (1894); Morley Sewing Machine Co. V. Lancaster, 129 U.S. 263, 273 (1889); McCormick V. Talcott, 61 U.S. (20 How.) 402, 405 (1857); Eibel Process Co. V. Minnesota & Ontario Paper Co., 261 U.S. 45, 63 (1923). However, even in the context of a pioneer patent, the Court applied a "known equivalents" rule, albeit appropriately modified to eliminate the requirement of being known in that previously unknown art at the time the patent issued. As explained in Morley Sewing Machine:

It may be true that the defendant's peculiar form of stitch was unknown before; and it may also be true that his arrangement for carrying the buttons with their eyes upward, and turning the eyes into a horizontal plane by the twisting of the conveyer-way,

See also MAC Corp. v. Williams Patent Crusher & Pulverizer Co., 767 F.2d 882, 884 n.3, 226 USPQ 515, 517 n.3 (Fed. Cir. 1985).

was not before known. Of course, they were not before known in a machine for automatically sewing buttons to a fabric, because Morley's machine was the first to do that. But still, the defendant employs for the above purposes known devices, which, in mechanics, were recognized as proper substitutes for the devices used by Morley to effect the same results.

In this sense, the mechanical devices used by the defendant are known substitutes or equivalents for those employed in the Morley machine to effect the same result; and this is the proper meaning of the term "known equivalent," in reference to a pioneer machine such as that of Morley. Otherwise, a difference in the particular devices used to accomplish a particular result in such a machine would always enable a defendant to escape the charge of infringement, provided such devices were new with the defendant in such a machine, because, as no machine for accomplishing the result existed before that of the plaintiff, the particular device alleged to avoid infringement could not have existed or been known in such a machine prior to the plaintiff's invention.

129 U.S. at 289-90.

The tenet that the substitution had to be a known equivalent at the issue date was consistently applied prior to Graver and was explicitly reiterated in 1946 by the Supreme Court in Halliburton Oil Well Cementing, 329 U.S. at 13, shortly before Graver II, where the Court explained:

[T]he alleged infringer could have prevailed if the substituted device (1) performed a substantially different function; (2) was not known at the date of Walker's patent as a proper substitute for the resonator; or (3) had been actually invented after the date of the patent. [Emphasis added.]

<sup>&</sup>lt;sup>24</sup> The term "pioneer" was defined in Westinghouse, 170 U.S. at 561-62:

This word, although used somewhat loosely, is commonly understood to denote a patent covering a function never before performed, a wholly novel device, or one of such novelty and importance as to mark a distinct step in the progress of the art, as distinguished from a mere improvement or perfection of what had gone before. Most conspicuous examples of such patents are the one to Howe of the sewing machine; to Morse of the electrical telegraph; and to Bell of the telephone.

Thus, the law preceding Graver II was that equivalency had to be known at the date of the patent.<sup>25</sup>

## b. Prosecution History Estoppel

A construction of the claim to cover equivalents is precluded to the extent of the actions taken and the statements made by the patentee to the Patent Office in securing the patent grant. A patentee is not entitled, after patent issuance, to have protection from a claim extend to devices or processes or elements therein which during prosecution the inventor treated as a different invention from the one for which the inventor sought and obtained protection. Even where the scope could extend to equivalents, infringement is barred by reason of the patentee's manifest intent.

The precedent is voluminous in which the Court applied estoppel based on prosecution as a matter of law. See Sutter v. Robinson, 119 U.S. 530, 541 (1886) ("[Patentee] is not at liberty now to insist upon a construction of his patent [i.e., legal effect] which will include what he was expressly required to abandon and disavow as a condition of the grant."); Keystone Driller Co. v. Northwest Eng'g Corp., 294 U.S. 42, 48 (1935) (Principle applied "that where such broad claims are denied and a

narrower substituted, the patentee is estopped to read the granted claim as the equivalent of those which were rejected." (footnote omitted)); Smith v. Magic City Kennel Club, 282 U.S. 784, 790 (1931) ("[W]here a patentee has narrowed his claim in order to escape rejection, he may not 'by resort to the doctrine of equivalents, give to the claim the larger scope which it might have had without the amendments which amount to a disclaimer.'") (citing Weber Electric Co. v. E. H. Freeman Electric Co., 256 U.S. 668, 677 (1921)); and I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429, 444 (1926) (same).

#### c. Prior Art Limitations

Somewhat related to the rationale of prosecution history estoppel, which applies to an element, is the tenet that a claim to a product or process cannot be construed so as to encompass the same or substantially the same overall product or process in the prior art. Keystone Driller, 294 U.S. at 46-47 ("We hold, in view of the prior art and of the file wrapper, the petitioner is not entitled to a broad reading of the claim."); Computing Scale Co. v. Automatic Scale Co., 204 U.S. 609, 617 (1907) ("[I]t is well settled that the claim as allowed must be read and interpreted with reference to the rejected claim, and to the prior state of the art, and cannot be so construed as to cover either what was rejected by the Patent Office or disclosed by prior devices." (quoting Hubbell v. United States, 179 U.S. 77, 80 (1900)); Knapp v. Morss, 150 U.S. 221, 224-25 (1893) (same). Accord Wilson Sporting Goods Co. v. David Geoffrey & Assoc., 904 F.2d 677, 684, 14 USPO2d 1942, 1948 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990).

#### d. No Enlargement of the Claim

Because of the importance of claim limitations in modern patent practice, litigants frequently argue today that infringement by equivalents ipso facto "enlarges" the

<sup>25</sup> Nat'l Cash Reg. Co. v. Boston Cash Indicator and Rec. Co., 156 U.S. 502, 516-17 (1895); Hoyt v. Horne, 145 U.S. 302, 309 (1892); Morley Sewing Machine, 129 U.S. at 289-90; Electric RR Signal Co. v. Hall Railway Signal Co., 114 U.S. 87, 96 (1885); Rowell v. Lindsay, 113 U.S. 97, 102 (1885); Clough v. Gilbert & Barker Mfg. Co., 106 U.S. 166, 178 (1882); Wicke v. Ostrum, 103 U.S. 461, 469 (1880); Goodyear Dental Vulcanite v. Davis, 102 U.S. 222, 227 (1880); Imhaueser v. Buerk, 101 U.S. 647, 656 (1879); Fuller v. Yentzer, 94 U.S. 288, 297 (1876); Fuller v. Yentzer; Same v. Goodrich, 94 U.S. 299, 300 (1876); Gill, 89 U.S. at 30; Mitchell v. Tilghman, 86 U.S. (19 Wall.) 287, 418 (1873); Gould, 82 U.S. at 194; Seymour v. Osbourne, 78 U.S. (11 Wall.) 488, 556 (1870); McCormick, 61 U.S. at 405; O'Reilly, 56 U.S. at 123; Carver v. Hyde, 41 U.S. (16 Pet.) 513, 519 (1842); Prouty, 41 U.S. at 341.

claim to cover unclaimed subject matter. In a sense, that is true. When infringement is found under the doctrine, the claim protects something not literally specified in the claim. But a distinction can be drawn that is not too esoteric between substitution of an equivalent for a component in an invention and enlarging the metes and bounds of the invention beyond what is claimed. And it is a distinction that the Supreme Court has consistently drawn. Enlargement of the metes and bounds of the claim requires reexamination by the office charged with that function, now the Patent and Trademark Office. In contrast, assuming the PTO had done its job, as we must, known equivalents of a claim element were considered in determining patentability of an issued claim.<sup>26</sup>

Hilton Davis argues that the Warner-Jenkinson process is an "equivalent" of the claimed process. In rejecting the patentee's similar assertion of overall equivalency as the test for infringement, the Supreme Court held in Burr v. Duryee, 68 U.S. (1 Wall.) 531, 573 (1863):

The argument used to show infringement assumes that every combination of devices in a machine which is used to produce the same effect, is necessarily an equivalent for any other combination used for the same purpose. This is a flagrant abuse of the term "equivalent."

Where a claim to an invention is expressed as a combination of elements, as here, "equivalents" in the sobriquet "Doctrine of Equivalents" refers to the equivalency of an element or part of the invention with one that is substituted in the accused product or process. The theory of infringement under the doctrine is that substitution of an equivalent for a part of a claimed combina-

tion means that the accused process or product is substantially the same as the claimed invention. Graver II, 339 U.S. at 608; Sanitary Refrigerator, 280 U.S. at 41-42; Union Paper Bag Machine Co. v. Murphy, 97 U.S. 120, 125 (1877). An infringing product or process may also be referred to as an "equivalent" of the invention, but more than overall equivalency is required. While a ball-point and fountain pen may be equivalent overall, they are not equivalent in the sense of the doctrine because their components are not equivalent. As further explained in Burr, 68 U.S. at 572:

Now, the machine of Boyden has not one of the peculiar devices, or combination of devices, of the Wells machine, nor any substantial identity with it, unless by substantial identity is meant every machine which produces the same effect. These abstract phrases, "substantial identity," "equivalent," "mode of operation," &c., are often used in such a vague and equivocal manner, that they mystify and lead many to absurd conclusions, who will not distinguish between things that differ. That two machines produce the same effect, will not justify the assertion that they are substantially the same, or that the devices used by one are, therefore, mere equivalents for those of the other. [Emphasis added.]

This view that the accused device or process must be more than "equivalent" overall reconciles the Supreme Court's position on infringement by equivalents with its concurrent statements that "the courts have no right to enlarge a patent beyond the scope of its claims as allowed by the Patent Office." Minerals Separation, 250 U.S. at 347 (quoting Keystone Bridge, 95 U.S. at 278). The "scope" is not enlarged if courts do not go beyond the substitution of equivalent elements.

In Minerals Separation, the claims in issue specified the use of "a fraction of one percent of oil" in a process to

Consideration of equivalents to elements of a claim has been part of examination of applications for patentability over prior art under all statutes. This concept is now embodied in examination under section 103. 35 U.S.C. § 103.

improve the concentration of ore. The Court rejected the argument that the claims were indefinite because a precise fraction was not specified. *Id.* at 338. But, by the same token, the express limitation to less than one percent fixed the scope of protection. Thus, the defendant's use of oil in excess of one percent did not constitute infringement. *Id.* at 354.

The prohibition against enlargement of a claim had been explicated earlier in the cited case Keystone Bridge, 95 U.S. at 278-79, as follows:

When a claim is so explicit, the courts cannot alter or enlarge it. If the patentees have not claimed the whole of their invention, and the omission has been the result of inadvertence, they should have sought to correct the error by a surrender of their patent and an application for a reissue . . . [T]he courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office, or the appellate tribunal to which contested applications are referred. When the terms of a claim in a patent are clear and distinct (as they always should be), the patentee, in a suit brought upon a patent, is bound by it. . . . As patents are procured ex parte, the public is not bound by them, but the patentees are. And the latter cannot show that their invention is broader than the terms of their claims; or, if broader, they must be held to have surrendered the surplus to the public.

If the patentee is entitled to a patent for [a] product [or process] ... and has failed ... to obtain it, the law affords him a remedy, by a surrender and reissue. When this is done, the world will have fair notice of what he claims, of what his patent covers, and must govern themselves accordingly ... [N]othing can be more just and fair, both to the patentee and to the public, than that the former

should understand, and correctly describe, just what he has invented, and for what he claims a patent.

Similiarly, the Court has repeatedly held that the complete elimination of an element in a claimed combination creates a different invention. Vance v. Campbell, 66 U.S. (1 Black) 427, 429-30 (1861); Schumacher v. Cornell, 96 U.S. 549, 554 (1877); accord Pennwalt v. Durand-Wayland, Inc., 833 F.2d 931, 4 USPQ2d 1737 (Fed. Cir. 1987) (in banc), cert. denied, 485 U.S. 1009 (1988). Equivalency encompasses merely substitutions in the patented combination. As held by the Court in Union Water-Meter, 101 U.S. at 337:

It may be observed, before concluding this opinion, that the courts of this country cannot always indulge the same latitude which is exercised by English judges in determining what parts of a machine are or are not material. Our law requires the patentee to specify particularly what he claims to be new, and if he claims a combination of certain elements or parts, we cannot declare that any one of these elements is immaterial. The patentee makes them all material by the restricted form of his claim. We can only decide whether any part omitted by an alleged infringer is supplied by some other device or instrumentality which is its equivalent.

See also Yale Lock Mfg. Co. v. Sargent, 117 U.S. 373, 378 (1866) ("The defendant does not use the same combination, and employs no device as an equivalent and substitute for the omitted element.", citing Union Water-Meter and Gage v. Herring, 107 U.S. 640 (1883)). In the Court's view, where an equivalent is substituted for an element, the combination may remain essentially the same invention, not one broader than that of the claim, i.e., a species claim remains a species claim. Conversely, to enforce the claim against a combination lacking even one element or its equivalent would extend coverage to a

different invention because the claim is thereby broadened. The accused infringement is, ipso facto, not substantially the same as the patented invention without at least an equivalent substituent for each element of a claim. Infringement requires, inter alia, that every limitation of a claim be satisfied exactly or by an equivalent. Pennwalt, 833 F.2d at 935, 4 USPQ2d at 1739-40; Read Corp., 970 F.2d at 822, 23 USPQ2d at 1431. See Cimiotti Unhairing Co. v. American Fur Refining Co., 198 U.S. 399, 410 (1905), and cases cited therein.

It would unnecessarily lengthen this already lengthy opinion to review all of the permutations of the doctrine as applied to inventions of various types and character preceding the Graver II decision.<sup>27</sup> Suffice here as a general summary that a finding of infringement under the doctrine required the court to determine the meaning and scope of the claim, based on the inventor manifesting an intent to cover equivalents in the claims or specification; the components of the accused product or process had to be equivalent in fact and finally, as a matter of law, the claim could cover only such equivalent substituents in the accused product or process that did not violate the foregoing tenets.

## 3. Graver II

The majority states that "the Supreme Court mapped the modern contours of the doctrine of equivalents in its landmark Graver Tank decision," slip op. at 5, and concludes that infringement may be found under that precedent. Clearly not. The majority has taken an errant detour off the map drawn in the Graver II decision.

The importance of Graver II lies in the Court's affirmation that the doctrine "continues today ready and available for utilization when the proper circumstances for its application arise." Graver II, 339 U.S. at 608. In the Graver decisions, the Supreme Court reviewed a case raising issues of the validity and infringement of a patent owned by Linde Air Products Company for an electric welding process and for fluxes to be used therewith. The district court had held certain flux claims and all process claims invalid. Those claims merely required silicates or metallic silicates as the principal constituent of the flux. While nine operative silicates (including manganese) were listed in the specification,28 the claims were so broad as to include inoperative embodiments and processes. Linde Air Prods. Co. v. Graver Tank & Mfg. Co., 86 F. Supp. 191, 198, 75 USPQ 231, 237-38 (N.D. Ind. 1947). However, the district court upheld four narrower flux claims and found infringement by application of the doctrine of equivalents. Id. at 199, 75 USPQ at 238. These valid flux claims (claims 18, 20, 22, and 23) specified a combination of ingredients, a major constituent being an alkaline earth metal silicate, such as magnesium silicate. The infringer used a nonalkaline earth metal, namely manganese, in the flux in place of magnesium. The district court first found that the two compositions were identical in operation, in the kind of weld produced, and for all practical purposes manganese silicate could be substituted in the claimed composition. The court then stated:

The doctrine also encompassed changes other than substitution of an equivalent for a claim element, such as rearranging steps of a method, combining two parts into one, separating one element into two, and changes in shape. Sanitary Refrigerator involved reciprocal changes "in form and position"; the position of a lug was changed which required shortening the arm of a latch. 280 U.S. at 42.

<sup>&</sup>lt;sup>28</sup> At the time of filing the Linde application, the Patent Office restricted an applicant to three species claim. See L. Chasan, Graver v. Linde—A Valid Patent, J. Pat. Off. Soc'y, Vol. XXXII, No. 4, p. 285, 295-96 (April 1950) (PTO limited species claims to three in one application whereas the inventor in Graver had disclosed nine in its specification).

Whether it actually infringes these claims depends upon what application is made of the doctrine of equivalents.

Id. at 199, 75 USPQ at 238. To answer that question, the court considered the entirety of the patent and its prosecution. Looking to the specification, the court concluded that manganese was taught as a substituent in the invention and noted that the inventors specifically stated that other suitable materials including manganese could form the main body of the flux. Thus, applying the doctrine, the court entered judgment of infringement.

The Court of Appeals affirmed validity and infringement of the narrow claims, 167 F.2d 531, 538-39, 77 USPO 207, 213 (7th Cir. 1948), cert. granted, 335 U.S. 810 (1948), but reversed the judgment of invalidity of the broad claims, holding that they were valid as to the nine listed operative embodiments. Id. at 538, 77 USPQ at 212. In the first Supreme Court decision, Graver Tank Mfg Co. v. Linde Air Prods. Co., 336 U.S. 271 (1949) (Graver 1), the Court unanimously upheld the validity and infringement of the narrow claims, two justices separately concurring on the issues of validity. The Court principally focused on the validity of the broad flux claims and held that the Court of Appeals erred in upholding their validity by restricting them to the nine operative embodiments in the specification, instead of evaluating the invention as claimed. Graver I, 336 U.S. at 277.

The second Graver decision, 339 U.S. 605, (Graver II), followed the grant of a petition for rehearing (337

U.S. 910) limited to the question of infringement of the four valid flux claims under the doctrine. Specifically, the Court stated that on rehearing the issue was limited to "the applicability of the doctrine of equivalents to the findings of fact in this case." Id. at 910-11. See also Graver II, 339 U.S. at 606. The infringer urged that the doctrine conflicted with the statutory requirement for distinct claims and should be eliminated as a basis for infringement. See Arthur H. Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y 19, 32 (Jan. 1951).

The Graver II analysis of infringement began by restating the general purposes behind recognition of infringement by an imitation which does not copy every literal detail of a patented invention. To accept literalism would encourage the unscrupulous copyist. "[U]nimportant and insubstantial changes and substitutions in the patent" should not escape the reach of the law. Graver II, 339 U.S. at 607. The Court denounced minor variations made to "conceal and shelter the piracy," and saw unfairness in placing an inventor "at the mercy of verbalism." Id. The Court explained that the essence of the doctrine of equivalents, which had been applied since Winans (56 U.S. (15 How.) 330) and ever since, is that one may not practice a "fraud on a patent." Graver II, 339 U.S. at 608.

On the issue raised by the petition, the Court was unpersuaded to write an obituary for the doctrine. The Court reaffirmed its viability, stating that it continued "ready and available for utilization when the proper circumstances for its application arise." Graver II, 339 U.S. at 608. It stated that a patentee may invoke this doctrine against a producer of a device that performs substantially the same function in substantially the same way to obtain the same result as the patented invention, quoting the tripartite test of Sanitary Refrigerator, 280 U.S. 30. Graver II, 339 U.S. at 608.

<sup>&</sup>lt;sup>29</sup> The concurring opinion disagreed with the majority's standard of review of validity as a finding of fact. In their view, "whether the thing patented amounts to a patentable invention is a question of law to be decided by the courts as such." Graver 1, 336 U.S. at 280. That view prevailed ultimately in Graham v. John Deere, 383 U.S. 1 (1966).

The Court reaffirmed its precedent that both pioneer and secondary inventions were entitled to protection under the doctrine, although the area of equivalence may vary under the circumstances. It discussed the "reverse" doctrine of equivalents, citing Westinghouse, 170 U.S. 537, 568, a case with claims drafted referring back to the specification. It approved the application of the doctrine to chemical compositions "where there was equivalence between chemical ingredients" Graver II, 339 U.S. at 609. With respect to determining equivalency of ingredients, it stated (emphasis added):

What constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of this case. Equivalence, in the patent law, is not the prisoner of a formula.... Consideration must be given to the purpose for which an ingredient is used in a patent, the qualities it has when combined with the other ingredients, and the function which it is intended to perform. An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contined in the patent with one that was.

A finding of equivalence is a determination of fact. Id. As will be explained, I have added the emphasis to show how I believe the passage should be read.

Turning to the facts in *Graver*, the Court noted that the accused and patented products were "alike" in all respects except for the substitution of manganese for magnesium and stated:

The question which thus emerges is whether the substitution of the manganese which is not an alkaline

earth metal for the magnesium which is, under the circumstances of this case, and in view of the technology and the prior art, is a change of such substance as to make the doctrine of equivalents inapplicable; or conversely, whether under the circumstances the change was so insubstantial that the trial court's invocation of the doctrine of equivalents was justified.

Id. at 610.

The Court noted the evidence of record and the findings of the trial judge therefrom that the accused "Lincolnweld" flux and the patented composition were substantially identical, that they were equivalent for welding purposes, and that "for all practical purposes, manganese silicate can be efficiently and effectually substituted for calcium and magnesium silicates as the major constituent of the welding composition." These findings were held not clearly erroneous. *Id.* at 611-12.

With respect to whether invocation of the doctrine was justified under the circumstances, the Court stated:

It is difficult to conceive of a case more appropriate for application of the doctrine of equivalents. The disclosures of the prior art made clear that manganese silicate was a useful ingredient in welding compositions. Specialists familiar with the problems of welding compositions understood that manganese was equivalent to and could be substituted for magnesium in the composition of the patented flux and their observations were confirmed by the literature of chemistry. Without some explanation or indication that Lincolnweld was developed by independent research, the trial court could properly infer that the accused flux is the result of imitation rather than experimentation or invention. Though infringement was not literal, the changes which avoid literal infringement are colorable only. We conclude that the trial court's judgment of infringement respecting the four

<sup>30</sup> Because of current claiming practice, the reverse doctrine is now rarely invoked and even more rarely applied except under § 112, ¶ 6.

flux claims was proper, and we adhere to our prior decision on this aspect of the case.

Id. at 612.

Once the Court decided to reendorse the doctrine, the Graver facts presented a routine case for affirming infringement. The infringer made a substitution for one ingredient in an improved patented flux composition. There was no "enlargement." The substituted ingredient was known by those skilled in the art to be equivalent to the ingredient of the claim, having been used in prior art fluxes. The scope of the claim could include equivalents because of the extension to equivalents in the description in the specification and the broad (invalid) claims of the patent. Under such circumstances, the substitution of manganese for magnesium was only a "colorable" change.

It must be noted that the Court did not speak in Graver II of the need for notice to the public by the claim. However, the facts of Graver were unique: the manganese flux was a protected embodiment of the invention when the infringer began its use. It was disclosed in the specification as an example of the broad claims of the patent, as issued, to a flux containing metallic silicates. Graver I, 336 U.S. at 276. Only after Graver I were these claims finally invalidated. Id. at 276-79. Thus, the maxim that disclosed but unclaimed subject matter is deemed to be dedicated to the public 31 did not apply. While the inventor's attempt to claim his invention broadly failed, it was clear from the patent itself that the inventor did not intend to dedicate the disclosed manganese embodiment of his invention to the public. Clearly, the normal tension between the doctrine and notice to the public of the scope of an invention did not exist. The Graver infringer was on notice from the patent itself that it was taking an embodiment of the invention. A narrower application of the doctrine is hardly conceivable.

The majority seizes on the sentence "A finding of equivalence is a determination of fact," Graver II, 339 U.S. at 609, as a declaration by the Graver II Court that the determination of infringement under the doctrine is entirely a fact question and, therefore, for the jury. This would be a remarkable change from what the law had been. I read the statement in context to say "What constitutes equivalency... of an ingredient not contained in the patent with one that was . . . is a determination of fact." It would be helpful to the position I advocate if the Court had expressly declared that the meaning and scope of a claim remain questions of law for the court. However, applying the doctrine of equivalents to the Court's language, I equate "the application of the doctrine of equivalents," the words the Court used, with determining the proper scope of the claim.

The Graver Court overturned none of its precedent that the meaning and scope of a claim are issues of law. To the contrary, the Court relied on Winans, Sanitary Refrigerator, Union Paper Bag Machine Co., Gould, and Westinghouse, id. at 608-09, all of which reflect that principle. The legal effect of a claim. i.e., its scope, is a matter for the court to decide as an issue of law, not fact.

## 4. The Patent Act of 1952

The major revision of the patent statute in 1952 says nothing about infringement based on equivalency overall or to elements of a claim except in section 112, ¶ 6. It was argued, after enactment of the 1952 Act, post-Graver II, that the judicial doctrine of "equivalents" conflicted with the 1952 Act and should be eliminated. See Noll v. O.M. Scott Co., 467 F.2d 295, 299 n.2, 175 USPQ 392, 396 n.2 (6th Cir. 1972), cert. denied, 411 U.S. 965 (1973); 1970 Am. Pat. L. Ass'n Bull. 27-29. However, the appellate courts continued to apply Graver Tank both affirmatively and negatively under varying formulations of the standard. See Mead Digital Sys., Inc. v. A.B. Dick

<sup>31</sup> Sontag Chain Stores, 310 U.S. at 293.

Co., 723 F.2d 455, 221 USPQ 1035 (6th Cir. 1983): CMI Corp. v. Barber-Greene Co., 683 F.2d 1061, 217 USPQ 456 (7th Cir. 1982) (issue taken from jury); Sarkisian v. Winn-Proof Corp., 686 F.2d 671 213 USPO 912 (9th Cir. 1981), on reh'g, 688 F.2d 647 (9th Cir. 1982) (in banc), on remand, 697 F.2d 1313, 217 USPQ 702, cert. denied sub nom. Carsonite Int'l Corp. v. Carson Mfg. Co., 460 U.S. 1052 (1983); Sealed Air Corp. v. United States Int'l Trade Comm'n, 645 F.2d 976, 209 USPQ 469 (CCPA 1981); Weidman Metal Masters Co. v. Glass Master Corp., 623 F.2d 1024, 207 USPO 101 (5th Cir. 1980), cert. denied, 450 U.S. 982 (1981); Ziegler v. Phillips Petroleum Co., 483 F.2d 858, 177 USPO 481 (5th Cir.), cert. denied 414 U.S. 1079 (1973); Graphicana Corp. v. Baia Corp., 472 F.2d 1202, 176 USPQ 455 (6th Cir. 1973); Nelson v. Batson, 322 F.2d 132, 138 USPO 552 (9th Cir. 1963); Entron, Inc. v. Jerrold Elecs. Corp., 295 F.2d 670, 131 USPQ 209 (4th Cir. 1961):

The Supreme Court itself has not spoken on the doctrine after enactment of the current statute. It has, however, used similar language in construing claims for validity purposes by reference to the specification, prior art, and the prosecution history. Graham v. John Deere, 383 U.S. 1, 33-34 (1966) (claims carefully drafted; not free to assert broader view of invention); 32 Adams v. United States, 383 U.S. 39, 48-51 (1966) (no equivalent of invention in prior art).

Our precedent has also drawn a fact/law distinction, albeit not clearly, between the tripartite test and at least some restrictions on the scope of infringing equivalents. As stated in *Thomas & Betts Corp.* v. *Litton Sys. Inc.*, 720 F.2d 1572, 1579, 220 USPQ 1, 6 (Fed. Cir. 1983), we held:

A finding of equivalency, namely, that a device performs substantially the same function in substantially the same way to obtain the same result, is a determination of fact.

Conversely, we have declared de novo review is required for the legal questions of: (1) the meaning of the claim (Markman, 52 F.3d at 970-71, 34 USPQ2d at 1322; Read Corp., 970 F.2d at 821, 23 USPQ2d at 1431); (2) whether an asserted range of equivalents would cover what is already in the public domain (Wilson Sporting Goods, 904 F.2d at 683, 14 USPQ2d at 1948); and (3) prosecution history estoppel (Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1173, 26 USPQ2d 1018, 1024 (Fed. Cir. 1993)). Properly understood, as previously explained, these questions are merely subparts under the larger question of the scope of protection to which the claim is entitled. Accord Ziegler, 483 F.2d at 867, 177 USPQ at 487. We have, however, never articulated that under the doctrine the scope of equivalents is a separate legal question.

In sum, I conclude that a finding of infringement under the doctrine is a mixed question of law and fact. In a jury case, proper instructions must identify factual issues and legal limitations on finding equivalency. On the other hand, the meaning and scope of a claim are issues of law for the trial judge to decide. In ruling on the issue, I would require the trial judge to explain the basis for its conclusion that a competitor would have notice that the claim covers equivalent elements of the claimed product or process.

As will become evident, the trial judge in this case sent the case to the jury without any restrictions on what was a legal equivalent beyond the tripartite test and their "finding" of no estoppel (an issue of law). Further, the court legally erred in holding, post-verdict, that "the doctrine of equivalents applies" under the circumstances of this case.

<sup>&</sup>lt;sup>32</sup> See Roy H. Wepner, The Patent Invalidity/Infringement Parallel: Symmetry or Semantics?, 93 Dickinson L. Rev. 67 (1988).

#### D. Merits

1. The Patent Claims in Suit are Wrongfully Enlarged to Find Infringement

As indicated, the claimed invention consists of a combination of steps in a process for ultrafiltration of certain dyes. Specifically, claim 1 requires, *inter alia*, three steps which are at issue here:

- Ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms;
- under a hydrostatic pressure of approximately 200 to 400 p.s.i.g.;
- 3. at a pH from approximately 6.0 to 9.0.

The accused process of Warner-Jenkinson operates at a hydrostatic pressure of 500 p.s.i.g. and at a pH of 5.0. Hilton Davis concedes that Warner-Jenkinson's process does not literally satisfy either of those claim elements (elements 2 and 3). Infringement is asserted solely under the doctrine of equivalents. The court entered judg-

ment upon the jury returning its verdict of infringement and issued an injunction enjoining Warner-Jenkinson from manufacturing or selling FD&C Red # 40 and FD&C Yellow # 6 dyes made at a pH less than 9.01 and at pressures at the input to the first membrane of less than 500 psig. Thus, the following comparison is appropriate:

Claimed Process	Warner-Jenkinson Injunction Process	Against Use of
Approx. 200-400 paig	500 psig	500 paig or less
pH from approx. 6.0-9.0	pH 5.0	any pH under 9.01

The majority nowhere recognizes the Supreme Court's binding precedent prohibiting enlargement of the scope of a claim, which is dispositive of this appeal without further analysis. The claims are clear and specific. Nothing in the specification indicates that the invention extends beyond the specific ranges. There is no dispute that the Warner-Jenkinson process does not meet all limitations of the claims. Under such circumstances, where there are no material issues of fact,

the question of infringement resolves itself in each case into one of law, depending upon a comparison between the structure disclosed on the face of the patent and the [accused device], and the correct application thereto of the rule of equivalency. Compare Singer Company v. Cramer, 192 U.S. 265, 275.

Sanitary Refrigerator, 280 U.S. at 36. Further, the most recent decision of the Supreme Court on point, Singer

<sup>&</sup>lt;sup>83</sup> The majority states that the Warner-Jenkinson process operates at a pressure of 200 to 500 p.s.i.g. However, at the correct measuring point, the upstream side of the membrane, the pressure was 500 p.s.i.g. That the pressure reduces thereafter is irrelevant.

There was no evidence of the pore size of the membranes in the ultrafiltration equipment used by Warner-Jenkinson. Warner-Jenkinson does not know the pore size of the membrane in its equipment and neither does Hilton Davis. Hilton Davis did not call the membrane supplier as a witness. The evidence is simply testimony that Warner-Jenkinson's pore size must be equivalent because the accused process works. In Malta v. Schulmerich Carillons Inc., 952 F.2d 1320, 21 USPQ 1161 (Fed. Cir. 1991), cert. denied, 504 U.S. 974 (1992), this court concluded that "conclusory statements" are "not sufficiently particularized evidence" to prove infringement under the doctrine of equivalents. Such evidence is clearly nonprobative that Warner-Jenkinson uses a membrane having the required pore size. Concluding Warner-Jenkinson's membrane had the claimed pore diameter is nothing short of mere

speculation. See Morton Int'l, Inc. v. Cardinal Chemical Co., 959 F.2d 948, 22 USPQ2d 1231 (Fed. Cir. 1992) (no infringement based on mere speculation as to the existence of a claimed compound).

<sup>35</sup> The scope of enlargement of the pH value is staggering inasmuch as a change of one numerical value represents a relative change in the acidity equal to a factor of 10. A change of two numerical values represents a relative change in the acidity equal to a factor of 100 (i.e. the pH scale is logarithmic).

Co., 192 U.S. 265, held that under such circumstances the trial court erred in not directing a verdict for the defendant on a proper application of the doctrine of equivalents. As stated therein with emphasis added:

[I]t is unnecessary to consider and decide any other assignment [of error] than that based upon the exception to the refusal of the court, at the close of all the evidence, to instruct a verdict for the defendant on the ground that "no infringement whatever had been shown." As in each of the patents in question it is apparent from the face of the instrument that extrinsic evidence is not needed to explain terms of art therein, or to apply the descriptions to the subject matter, and as we are able from mere comparison to comprehend what are the inventions described in each patent and from such comparison to determine whether or not the Diehl device is an infringement upon that of Cramer, the question of infringement or no infringement is one of law and susceptible of determination on this writ of error.

Id. at 275.

The Supreme Court then itself considered the structure of the accused device and, contrary to the majority opinion today, treated the issue of the "substantiality" of the change from the patented invention as a question for the court, not the jury:

Having determined the proper construction of the claim of the Cramer patent, which is relied upon, it remains only to consider whether, as correctly construed, infringement resulted from the employment by the Singer Company of the device covered by the Diehl patent. We find no difficulty in reaching a conclusion on this branch of the case. The treadle supports devised by Diehl, though they serve the same purpose as the device described and shown in

the Cramer patent, are substantially different in construction. Irrespective of the question whether the treadle in the Diehl device is hung in the vertical cross brace proper, or in an addition thereto properly to be regarded as the lower cross rod or cross tie of the machine, it is manifest that the bearing is essentially different in construction from that of Cramer, and is not adapted to receive an oscillating bar; while the treadle is not supplied with long projections fitted to oscillate in the vertical cross bar on bearings therein, but is constructed to turn on point center screws which fit tightly in circular openings in projections from the vertical cross bar. There is no substantial identity in the character of the two devices, unless, by substantial identity, is meant every combination which produces the same effect. The differences between the Diehl device and the Cramer construction are substantial and not merely colorable.

The trial court should have granted the motion to direct a verdict for the defendant.

Id. at 285-86 (emphasis added).

In the present case, and as held in Singer, because we know what the claim means and we know what process parameters Warner-Jenkinson uses, the issue of infringement under the doctrine, that is, the scope of the claim, resolves itself into one of law. Under a correct application of the doctrine of equivalents, the trial court erred in denying Warner-Jenkinson's JMOL.<sup>36</sup>

Nothing in Graver II warrants the finding of infringement in this case. The accused process does not substitute equivalents for each claim element. Hilton Davis set

<sup>36</sup> That Warner-Jenkinson also argued it was entitled to judgment as a matter of equity does not take away from its right to judgment as a matter of !aw.

the range of equivalent pH and pressure values by the claim language "approximately 6.0 to 9.0" and "approximately 200 to 400 p.s.i.g." It was not proved that 5.0 is the equivalent to one of skill in the art of approximately 6.0 to 9.0 pH or 500 p.s.i.g. is similarly equivalent to approximately 200-400 p.s.i.g. Hilton Davis had no claiming difficulties as in *Graver*. There is no indication in the specification that the invention was broader than claimed. In any event, the patentee merely had to set wider ranges during prosecution (or within two years from issuance) if the claim language did not reflect his invention. The claim would then have been examined for patentability on that basis. Whether such a claim would have been allowed, we do not know and cannot speculate. Hilton Davis is bound by the ranges it specified.

## 2. Prosecution History Estoppel

Finally, with respect to the pH step, an additional restriction comes into play. The examiner required the specific pH range to be added to the claim to overcome prior art. The prosecution history contains the following Examiner's Interview Summary:

The Examiner stated that if claim 1 were amended to contain the pH range of 6 to 9, the rejection on prior art would be overcome.

Hilton Davis's selection of a lower limit of 6.0 was intentional. Dr. Cook, an inventor, testified that Hilton Davis's process foamed undesirably if the pH dropped below 6.0. The specific amendment of the pH range by Hilton Davis in response to the Examiner's rejection precludes capturing the different process step of a pH of 5.0 used by Warner-Jenkinson.

Finding a process with a pH of 5.0 to be an infringement, assuming a pH of 5.0 and a pH of 6.0 were equiva-

lents, would violate the principle of prosecution history estoppel. In I.T.S. Rubber, 272 U.S. at 444-45, the Court stated:

Nor can [the accused products] be held to be infringements even if we assume that, as asserted, they function in the same manner as three-point-contact lifts, and would infringe, as was conceded in the District Court, if the claims were not restricted by the limiting clause and were entitled to a construction warranting a wide range of equivalents. By the limitation of the claims in the Patent Office proceeding to the three-point-contact lift the patentee made this precise form a material element, and having thus narrowed the claims, cannot, as was said in the Weber Electric Company case, now enlarge their scope by a resort to the doctrine of equivalents. This would render nugatory the specific limitation.

Accord Exhibit Supply, 315 U.S. at 136-37; LeHigh Valley, 158 U.S. at 469.

Having narrowed the claim's range of pH to secure the Examiner's withdrawal of his prior rejection, Hilton Davis may not now resort to the doctrine to cover equivalents thereof. This would render nugatory the specific limitation of the range of pH.

Hilton Davis's concession that a pH of 5.0 is not "approximately 6.0 to 9.0" and that 500 psig is not "approximately 200 to 400 psig" should have ended this charge of infringement as a matter of law. There was no material fact issue on infringement to give to the jury. The only disputed fact issue here relates to the pore size of the membrane. However, that dispute becomes immaterial because the undisputed facts are controlling in any event. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 248 (1986). As a matter of law, the pH and pressure values in Warner-Jenkinson's process are outside the legal scope of protection of the '746 patent. It is surplusage to point

<sup>&</sup>lt;sup>87</sup> See note 28, supra.

out that Warner-Jenkinson was not a "copyist" but developed its own process independently, an important factor in Graver II.

#### E. Conclusion

Under controlling Supreme Court precedent, the standard for infringement under the doctrine includes the legal limitation that a claim may not be enlarged beyond what was allowed by the Patent Office. In addition, the prosecution history creates an estoppel respecting the pH limitation. As in Sanitary Refrigerator, 280 U.S. 30, and Singer Co., 192 U.S. 265, the issue of infringement resolves to a question of law. Upon a correct application of the doctrine of equivalents to undisputed facts, the accused process does not infringe. Thus, the district court erred in not granting JMOL and entering judgment for Warner-Jenkinson. 30

As Warner-Jenkinson argues, it has been held liable without any possibility of notice that its process fell within the claims of the '746 patent. Claims must tell the public not only what it cannot do but also what it can do. Permutit Co., 284 U.S. at 60. Cf. A.B. Small Co. v. American Sugar Ref. Co., 267 U.S. 233, 239 (1925) (due process contravened where no specific or definite act was forbidden and liability depended on acts being "unjust and unreasonable in the estimation of the court and the jury.").

I would reverse the judgment of infringement.

#### APPENDIX B

## UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

93-1088

HILTON DAVIS CHEMICAL Co.,

Plaintiff-Appellee,

WARNER-JENKINSON COMPANY, INC., Defendant-Appellant.

DECIDED: August 8, 1995

Before MAYER, Circuit Judge, COWEN, Senior Circuit Judge, and RADER, Circuit Judge.

PER CURIAM.

Hilton Davis Chemical Co. sued Warner-Jenkinson Co., Inc. for infringement of U.S. Patent No. 4,560,746 (the '746 patent). The jury found that the '746 patent was not invalid and that Warner-Jenkinson infringed under the doctrine of equivalents. The trial court entered judgment on the jury verdict. Hilton Davis Chem. Co. v. Warner-Jenkinson Co., No. C-1-91-218 (S.D. Ohio June 22, 1992). Because the jury verdict that the '746 patent is not invalid is legally correct in light of the jury's underlying fact findings, which are supported by substantial evidence, this court affirms.

#### DISCUSSION

After this panel heard oral argument in this case, the court decided to rehear the appeal en banc to consider the important infringement issues raised concerning the doctrine of equivalents. After rehearing the appeal and

<sup>38</sup> Graver II did not overturn the precedent of Sanitary Refrigerator. Indeed, the Court cited that case with approval in Graver II.

The injunction enjoining pH values of 2.0-4.0, in any event, is too broad. A process with a pH of 2.0-4.0 was not found to be infringing. Only an infringing process may be enjoined. KSM Fastening Sys. v. H. A. Jones Co., 776 F.2d 1522, 1526, 227 USPQ 676, 679 (Fed. Cir. 1985) (contempt for violating an injunction limited to devices found to infringe).

reaching its decision on the infringement issues, the court remanded the validity issues for consideration by this panel. This panel issues this validity opinion as a companion to the en banc infringement opinion also issued today. See Hilton Davis Chem. Co. v. Warner-Jenkinson Co., No. 93-1088 (Fed. Cir. Aug. 8, 1995) (en banc). The facts are stated in the en banc opinion, familiarity with which the panel assumes.

The trial court submitted the issue of validity of the '746 patent to the jury. The jury found the patent non-obvious over the asserted prior art, not invalid for failure to name the correct inventors, and not invalid for failure to disclose the best mode. Warner-Jenkinson appeals the nonobviousness and inventorship findings.

Obviousness is a question of law based upon subsidiary fact questions, including (1) the scope and content of the prior art, (2) the differences between the prior art and the claimed invention, and (3) the level of ordinary skill in the art. Graham v. John Deere Co., 383 U.S. 1, 17 (1966). Obviousness also involves consideration of objective indicia of nonobviousness, which again are fact questions. See id. at 17-18; Texas Instruments Inc. v. United States Int'l Trade Comm'n, 988 F.2d 1165, 1178, 26 USPQ2d 1018, 1028 (Fed. Cir. 1993). In this case, the trial court submitted obviousness to the jury without asking for answers to the subsidiary fact questions. This court must infer that the jury answered the questions in a way that supports its legal conclusion of nonobviousness. Shatterproof Glass Corp. v. Libbey-Owens Ford Co., 758 F.2d 613, 621, 225 USPQ 634, 638 (Fed. Cir.), cert, dismissed, 474 U.S. 976 (1985). This court reviews the jury's inferred answers to the subsidiary fact questions for substantial evidence. Id.; see also Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1550, 220 USPQ 193, 199-200 (Fed. Cir. 1983).

Warner-Jenkinson's first obviousness contention is that the '746 claims, properly construed, do not require skipping "salting out." Salting out is an expensive operation that involves adding salt to the reaction solution of a dye to crystallize the dye. The dye may then be filtered from the remaining solution substantially free of impurities.

The claim belies Warner-Jenkinson's claim construction. The claim states:

In a process for the purification of a dye selected from [a Markush group] as the products resulting, respectively, from [diazortization followed by coupling, or condensation followed by sulfonation, of five compounds], said dye being present in the resulting reaction mixtures, along with impurities, the improvement which comprises: subjecting an aqueous solution of the reaction mixture resulting from said coupling or said sulfonation to ultrafiltration through a membrane . . . to thereby cause separation of said impurities from said dye . . . . (Emphasis added.)

Claim 1 thus subjects a solution of the reaction mixture to ultrafiltration—not a solution of the crystallized product of salting out of the reaction mixture. Claim 1 skips the salting out step.

The '746 specification describes a process that includes a salting out step, and the inventors amended claim 1 during prosecution to recite "subjecting" instead of "directly subjecting" the solution of the reaction mixture to ultrafiltration. The plain meaning of the claim language, however, excludes salting out. "The claim is a statutory requirement, prescribed for the very purpose of making the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms." White v. Dunbar, 119 U.S. 47, 52 (1886). The plain import of claim 1 is to exclude salting out.

To show obviousness, Warner-Jenkinson relied at trial on three prior art references: the Booth patent; Osmonics Bulletin No. 109 (the Osmonics Bulletin); and U.K. Patent No. 1,359,898 (the British patent). The Booth patent discloses an ultrafiltration process for purifying colorant solutions. However, the Booth patent describes colorants having greater molecular sizes than those purified in the '746 process. The Booth process also uses a pH higher than 9, preferably from 11 to 13, and pressures from 25 to 200 p.s.i.g., preferably 75 to 125 p.s.i.g. The Booth patent thus teaches higher pHs and lower pressures than those specified in the claims of the '746 patent. Finally, the Booth patent teaches salting out, which the inventors disclaimed to secure allowance of the '746 patent.

The Osmonics Bulletin discloses various membranes for ultrafiltration. The inventors discussed the Bulletin in the '746 patent specification. The Bulletin does not suggest the particular combination of membrane pore sizes, pHs, and pressures for purifying food dyes as claimed in the '746 patent. Moreover, Warner-Jenkinson's lack of success, and Hilton Davis' initial lack of success, in producing acceptable purification results using information from the Bulletin supports the jury's finding that the '746 method is nonobvious in view of the Bulletin.

The British patent discloses a process for removing salt from textile dyes to prevent separation during storage. That process removes residual salt from dyes after salting out. In contrast, the '746 process replaces salting out. One example in the British patent teaches starting with a solution where the dye cannot be salted out without great difficulty. Trial testimony, however, showed that the process in this example yielded a dye of unspecified purity, rather than a food dye of approximately 90% purity as claimed in the '746 patent. Also, Warner-Jenkinson presented no evidence that the prior art suggested the pore size and pressure ranges disclosed in the British patent would separate impurities from dye in the Hilton Davis process.

Warner-Jenkinson also asserts its unsuccessful 1982 test at Osmonics as prior art. Osmonics performed the test for Warner-Jenkinson under a secrecy agreement. Therefore, the test can only qualify as prior art under 35 U.S.C. § 102(g) (1988). See W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1549-50, 220 USPO 303, 309-10 (Fed. Cir. 1983) (secret use is not prior art under 35 U.S.C. § 102(a), (b) (1988)), cert. denied, 469 U.S. 851 (1984). Warner-Jenkinson's 1982 test, however, was not successful, showing that Warner-Jenkinson did not actually reduce the tested process to practice as required for section 102(g) prior art. Kimberly-Clark Corp. v. Johnson & Johnson, 745 F.2d 1437, 1444-45, 223 USPO 603, 607 (Fed. Cir. 1984). Moreover, Warner-Jenkinson's failure to use the process for three and one-half years indicates abandonment, suppression, or concealment—still another consideration disqualifying the process as section 102(g) prior art. See Lutzker v. Plet, 843 F.2d 1364, 1367-68, 6 USPQ2d 1370, 1371 (Fed. Cir. 1988).

Objective considerations such as commercial success and failure of others also support finding nonobviousness. See Graham, 383 U.S. at 17-18. Dyes purified with the '746 process have enjoyed significant commercial success because of the reduced cost of the claimed method. Warner-Jenkinson's failure to successfully practice ultrafiltration at the time of Hilton Davis' conception in 1982 also suggests the nonobviousness of the '746 process.

The record shows differences between the prior art and the '746 process. The record also shows objective factors favoring nonobviousness. In short, the record contains substantial evidence supporting the findings the jury could have made to conclude that the '746 process was non-obvious over the cited prior art references. See Shatter-proof, 758 F.2d at 621.

Because courts presume patents to correctly name the inventors, claims of improper inventorship are "subjected

to the closest scrutiny." Amax Fly Ash Corp. v. United States, 514 F.2d 1041, 1047, 182 USPQ 210, 215 (Ct. Cl. 1974) (quoting The Barbed Wire Patent, 143 U.S. 275, 285 (1892)). "Such defenses are highly technical; courts disfavor these defenses on the strength of the legal presumption that the inventors named in a patent are the true ones." General Motors Corp. v. Toyota Motor Co., 667 F.2d 504, 507, 212 USPQ 659, 662 (6th Cir. 1981), cert. denied, 456 U.S. 937 (1982). Inventorship is a question of law, reviewed de novo on appeal, with "any facts found . . . in reaching an inventorship holding . . . reviewed for clear error" in an appeal from an interference proceeding, Sewall v. Walters, 21 F.3d 411, 415, 30 USPQ2d 1356, 1358 (Fed. Cir. 1994), or for substantial evidence in an appeal from a jury verdict.

Warner-Jenkinson challenges the validity of the '746 patent on the ground that Drs. Cook and Rebhahn, the named inventors, derived the claimed ultrafiltration process from Osmonics. Derivation requires communication of "at least so much of the claimed invention as would have made it obvious to one of ordinary skill in the art." New England Braiding Co. v. A.W. Chesterton Co., 970 F.2d 878, 883, 23 USPQ2d 1622, 1626 (Fed. Cir. 1992). Derivation is a question of fact. Price v. Symsek, 988 F.2d 1187, 1190, 26 USPO2d 1031, 1033 (Fed. Cir. 1993). When the jury returned its verdict that Cook and Rebhahn, not Osmonics employees, invented the claimed process, it necessarily found that Cook and Rebhahn did not derive the claimed invention from Osmonics. This court reviews that implied fact finding for substantial evidence: "To the extent that conflicting viewpoints were presented [or derivation], this was within the province of the jury." Shatterproof, 758 F.2d at 624.

Substantial evidence supports the jury's finding that no one at Osmonics communicated sufficient knowledge to Cook to make an inventive contribution. Gach was the Osmonics employee who assisted Cook in testing ultra-

filtration. Although Gach attempted to take credit for the '746 process at trial, he testified that to protect the confidentiality of Osmonics' relationship with Warner-Jenkinson, he concealed from Cook his knowledge of food dye purification gained from his work with Warner-Jenkinson. Cook testified that he received no intimation that Gach had any experience with a process similar to Hilton Davis', and that he used trial-and-error to identify an effective process. Significantly, Gach evaded questioning about Cook's role in the testing process, stating that he "cannot recall" whether Cook made observations and analyzed results.

Substantial evidence thus supports finding that instead of deriving the '746 process from Gach, Cook only directed Gach to assist him with developing the process. Gach's assistance is not enough to invalidate the '746 patent. "An inventor 'may use the services, ideas, and aid of others in the process of perfecting his invention without losing his right to a patent." Shatterproof, 758 F.2d at 624 (quoting Hobbs v. United States Atomic Energy Comm'n, 451 F.2d 849, 864, 171 USPQ 713, 724 (5th Cir. 1971)). The president of Osmonics testified. further more, that when Cook and Rebhahn obtained a patent on their invention, Osmonics chose not to pursue an inventorship claim. Moreover, during Gach's testimony, counsel for Warner-Jenkinson disclaimed offering Gach as an inventor.

In sum, there is substantial evidence that Cook did not derive the '746 process from Gach or anyone else at Osmonics. The '746 patent names the correct inventors.

The jury verdict that the '746 patent is not invalid is legally correct in light of the jury's underlying fact findings, which are supported by substantial evidence. Therefore, the judgment of the district court on validity is affirmed.

#### APPENDIX C

## IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF OHIO WESTERN DIVISION

Civil No. C-1-91-218

HILTON DAVIS CHEMICAL CO.,

Plaintiff,

VS.

WARNER-JENKINSON COMPANY, INC., Defendant.

TRANSCRIPT OF PROCEEDINGS
BEFORE THE HONORABLE HERMAN J. WEBER, JUDGE

Cincinnati, Ohio Tuesday, October 20, 1992

[41] THE COURT: It is my intent, and I hope that I can do it, and that is to make the necessary comments that will protect the record for the parties. I am not trying to make this record to protect any decision this Court makes. I'm attempting to protect the rights of the parties.

It is my understanding that the motion for judgment as a matter of law are based on several issues. One is the issue of obviousness which both parties agree is a matter of law. The inventors, who invented the '746, as I will refer to it, whether an inventor was omitted from

the application. The best mode defense. Another issue is that the infringement should be decided [42] in favor of the defendant as a matter of law; that there was estoppel as a result of the prosecution history and, therefore, the Court should deny the infringement claim; that the doctrine of equivalents is inapplicable to the situation. And the issue of lost profits we have discussed to some degree, but it's raised in the motion as well; and the willful infringement issue which we've discussed previously today.

Under plaintiff's theory that I am bound by the jury's determination has been conceded by the defendant—or excuse me, has been conceded by the plaintiff that it, the jury verdict in favor of the defendant on that issue, is final.

The Court will attempt to discuss the matters in hopefully some logical order and will attempt to discuss the obviousness issue which is paramount in the Court's mind so that the record will understand the consideration the Court has given these matters.

When we discuss the obviousness, why, we must consider the prior art. The prior art has been listed by both parties, and it is—the parties are in agreement as to the prior art that must be considered with the exception of the Koll, that's K-o-l-l, patent. That was Exhibit 124. The plaintiff maintains that it is part of the prior art. The defendant maintains that it is not. [43] This Court determines that the Koll patent is part of the prior art in the case.

The prior art, then, is listed as the Bollenback patent; the Adams patent; the Teed patent; the Booth patent; the South African 1981 and EPO 1982 patents; the Osmonics Bulletin Number 109; the British patent; the Lee and Wiley article; the Woo article; the Bardin patent; the Koll patent; the Osmonics brochure "Ultrafiltration and Reverse Osmosis Systems"; Scientific American Article, Exhibit 512; the prior work of Warner-Jenkinson;

the prior Osmonics work using test dyes; and other applications of membrane separation.

The Booth patent, one of the issues in the case and one of the arguments raised by defense was the fact that the patent examiner obviously didn't properly consider the Booth patent. This Court finds that the evidence is such that the Court concludes that the Booth patent was thoroughly considered by the patent examiner. The special process of pore size, pressure, and pH in the Hilton Davis process was dissimilar to the Booth, was nonobvious, and the Hilton Davis patent was novel.

The inventors of U.S. Patent '746 conceived a special process which skipped the salting-out steps and produced FDA certified quality with low dye loss FD&C Red 40 and FD&C Yellow 6 directly from the coupling solution [44] using membrane separation technology. It is a continuous and commercially process—and it is commercially viable.

The pertinent prior art was considered appropriately by the patent examiner who determined that the special process contained in the '746 patent was novel and unobvious. This determination is proper and correct under the evidence.

The defendant argued and presented the case to the jury that the patent examiner somehow or other was influenced by the patent agent of Hilton Davis or of the inventors. This Court finds that the actions of the patent examiner were proper in this case, and this Court cannot find by clear and convincing evidence that the patent examiner acted in any way improperly in issuing '746.

The plaintiff argued that the—or excuse me, it was the defendant argued that the plaintiff failed to supply the teachings of the British patent to the patent examiner. This Court finds that the British patent is similar to the Booth, the EPO, and the South African patents. The British patent is no more pertinent to the patentability of '746 than was the South African patent.

The Booth process maintained a pH above 9 and pressures of 200 to 400 psig and was not commercially [45] successful. The Booth process was in no way suggestive of the '746. The process conditions of '746 are not taught or suggested by the Colour, C-o-l-o-u-r, Index.

The distinction between Booth and '746 is the claims of the '746 patent of pH 6 to 9 and 200 to 400 psig, while Booth used greater than pH 9 and less than 200 psig. The '746 patent process must not be above pH 9 so that the membrane of 5 to 15 Angstroms would be protected from damage. The pH is important to the chemistry involved in the purification process and will be important to preserving the membrane.

The presure required by the '746 is important and does have an effect. These important instructions in the '746 distinguish it from the Booth patent.

The British patent includes salting out as part of the process. '746 eliminates the salting-out process. The alternate process of Example 22 of the British patent is not relevant to the problems facing the inventors of the '746.

The large pore size of the British patent distinguish it from '746.

Taken as a whole, these are significant differences between the British and the Booth patent and the '746.

There is substantial evidence in the record, [46] including the testimony of Dr. Kinman, K-i-n-m-a-n, that supports the reasonable conclusion that the subject matter of '746 would not have been obvious to a person of ordinary skill involved with dye processing and that the process patented in '746 was unobvious.

Dr. Cook with some—I'm moving on now to another subject, inventors. Dr. Cook with some suggestions from Dr. Rebhahn, R-e-b-h-a-h-n, were the only inventors of '746. From the inventors' point of view, the preferred way of carrying out the claimed process was through a membrane having a nominal pore diameter of 7 to 11 Angstroms, operating at a pressure of 200 to 400 psig,

within a pH range of 6 to 9. A 30 HCA membrane was not any better than the 20 VF and the 0 PA membranes

disclosed specifically in the patent.

Plaintiff was the first to successfully achieve a commercially viable continuous process for purifying FD&C Red 40 and FD&C Yellow 6 food dyes to FDA purity levels directly from the coupling solution without an intervening salting-out step, and defendant has used that process to its profit. There is a legally sufficient evidentiary basis for a reasonable jury to have found that the party with respect to that issue—found for that party with respect to that issue in favor of plaintiff.

[47] Based on the scope and content of the prior art, including the British patent, the difference between the prior art and the claims of '746 in issue and the level of ordinary skill of those engaged in the art of purification of the FD&C Red 40 and FD&C Yellow 6, the court finds that the '746 patent can be accepted as valid because the subject matter of '746 is different than the prior art to such an extent that the subject matter as a whole would have been unobvious at the time the invention was made to a person having ordinary skill in the art of purification of FD&C Red 40 and FD&C Yellow 6.

As to the work of Warner-Jenkinson and Osmonics, the work that they did was not made public, and they did this for justified business reasons, and the Court finds that their reasons were justified; but since their work was not in the public domain, it cannot be considered as relevant to the discussion of the prior art available to the inventors.

The '746 is commercially successful. It is the first and only process which successfully eliminates the salting-out process in the manufacture of FD&C Red 40 and FD&C Yellow 6. None of the prior art taught this process as a whole.

I've concluded that the Koll patent as part of the prior art teaches away from the '746.

[48] The defendant has not convincingly established that the '746 as a whole would have been obvious in 1982, 1983, and 1984 to a person of ordinary skill in the art of dye purification. Such ordinary person would be knowledgeable in dye chemistry, and I'm trying to define at this point my obligation to define what an ordinary person's knowledge would be. Such an ordinary person would be knowledgeable in dye chemistry but little background in membrane separation but would have knowledge of all the prior art which we have set forth.

In this regard, as I have previously said, Warner-Jenkinson's process did not work while the Hilton Davis process did work is interesting because it puzzled Osmonics why this particular phenomena took place.

Considering all the evidence, the Court finds that Dr. Kinman's testimony is credible. Therefore, this Court concludes that defendant has failed to prove by clear and convincing evidence that '746 is invalid.

Defendant argued at trial that Osmonics or others invented the '746 process. This Court respectfully disagrees. Dr. Cook with some help from Dr. Rebhahn was the inventor of the process known as '746.

Defendants have failed to establish by clear and convincing evidence that Dr. Cook knew a better mode of carrying out the claims of '746 than he disclosed in the [49] specifications on November 30, 1984.

This Court concludes that the defendant has infringed the '746 in manufacturing FD&C Red 40 and FD&C Yellow 6 by using the same process in substantially the same way and achieving the same result. On this point, I conclude Dr. Kinman's testimony is reliable and follow his opinion.

Plaintiff has established by a preponderance of the evidence that defendant has infringed '746 under the doctrine of equivalents.

In summary, on the issue of obviousness, the Court finds as a whole that '746 was unobvious to a person of ordi-

nary skill in the art in 1982, '83, and '84. Two, that Dr. Cook, on inventorship, Dr. Cook and Dr. Rebhahn conceived the '746; that Mr. Gach, G-a-c-h, was not an inventor. Three, on the issue of the better mode, Dr. Cook and Dr. Rebhahn did not conceal the better mode when they failed to put the 30 HCA specifically in the patent, but did use the other two membranes in the patent. Four, on the issue of infringement, the Court finds that the evidence supports the finding of the jury and the infringement of the patent by using a process which performed the same function in substantially the same way to yield the same result as '746.

The Court finds that the issue of prosecution [50] history estoppel, plaintiff did not surrender the psig above 400 or pH below 6. In this regard, the Court has already found, and I want the record to be clear, that the upper limit of the psig of plaintiff's invention is approximately the 400 psig figure, and this Court finds that the use of a psi at the input of the membrane of 500, over 5—500 or above is not an infringing act.

MR. SCHMIT: Excuse me, Your Honor.

THE COURT: Yes.

MR. SCHMIT: Can we have read back the sentence just before the one that you gave?

THE COURT: Sure.

(The record was read.)

MR. SCHMIT: Are those two consistent with each other if the upper limit is 400, as you said at the first sentence, but that anything over 500 is not an infringement?

THE COURT: Well, the finding that I wish to make is that the plaintiff did not surrender the psig above 400, but I am putting—I mean, I do not see from the result of what's going on now that getting into a psig of 500 is not—is beyond even my extension of the 400 figure.

MR. SCHMIT: Okay. Thank you for the clarification.

[51] THE COURT: Did we get that straight? I have to depend upon your expertise in some of these matters, which I have throughout the course of the trial.

The Court also finds that there is no—that no hypothetical claim literally describing defendant's process as was described at trial reads on any prior art.

The doctrine of equivalents is applicable to this case, and I find so and I hold.

The willful infringement has been conceded. The jury verdict is firm. There is no willful infringement at this point in time.

[Filed Jun. 22, 1992]

UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF OHIO

Case Number: C-1-91-218

HILTON DAVIS CHEMICAL COMPANY

V.

WARNER-JENKINSON COMPANY, INC.

# CORRECTED JUDGMENT IN A CIVIL CASE

(Entered Nunc Pro Tunc)

- ☑ Jury Verdict. This action came before the Court for a trial by jury. The issues have been tried and the jury has rendered its verdict.
- Decision by Court. This action came to trial or hearing before the Court. The issues have been tried or heard and a decision has been rendered.

## IT IS\_ORDERED AND ADJUDGED

that Judgment is entered in FAVOR of the Plaintiff, Hilton Davis Chemical Company, and AGAINST the Defendant, Warner-Jenkinson Company, Inc., in the amount of \$3,564,705.00 (THREE MILLION FIVE HUNDRED AND SIXTY-FOUR THOUSAND SEVEN HUNDRED AND FIVE DOLLARS) PLUS COSTS AND INTEREST AT THE LEGAL RATE.

169a

Date June 22, 1992

KENNETH J. MURPHY, JR. Clerk

/s/ Karen F. Jones
KAREN F. JONES
(By) Deputy Clerk

#### UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF OHIO WESTERN DIVISION

C-1-91-218

HILTON DAVIS CHEMICAL CO.,

Plaintiff

V.

WARNER-JENKINSON,

Defendant

#### **ORDER**

Pursuant to the record made at the Conference/Hearing held October 20, 1992 in open court and for the reasons and conclusions stated in the record, the Court rules as follows:

- Doc. No. 91—Defendant's Motion to Alter Judgment is DENIED.
- Doc. No. 92—Defendant's Motion for Judgment As a Matter of Law is DENIED.
- Doc. No. 93—Plaintiff's Motion for Registration of Judgment—DENIED AS MOOT.
- Doc. No. 132 Defendant's Motion to File is GRANTED.
- Doc. No. 138 Plaintiff's Motion to File is GRANTED.
- Doc. No. 139 Plaintiff's Motion for Trebling Damages and for Attorney's Fees is DE-NIED.

#### 171a

Doc. No. 140 Plaintiff's Motion to Compel is GRANTED under the conditions stated by the Court.

Plaintiff's Oral Motion to Conform the Judgment to the Jury Verdict is GRANTED and the Judgment is CORRECTED to conform to the verdict of the jury of \$3,564,705.00 Nunc Pro Tunc to June 22, 1992. This case is TERMINATED on the docket of this Court.

IT IS SO ORDERED.

/s/ Herman J. Weber
HERMAN J. WEBER
Judge
United States District Court

C-1-91-218

HILTON DAVIS CHEMICAL CO.,

Plaintiff

V.

WARNER-JENKINSON,

Defendant

#### PERMANENT INJUNCTION

This matter is before the Court on plaintiff's Motion for a Permanent Injunction following a jury verdict finding U.S. Patent No. 4,560,746 valid and infringed. After consideration of the verdict of the jury, the evidence introduced at trial, memoranda submitted by the parties and arguments of counsel, the Court finds that plaintiff's Motion should be granted.

IT IS, THEREFORE, ORDERED, ADJUDGED AND DECREED that defendant, Warner-Jenkinson Company, Inc., and its officers, agents, servants, employees, successors in interest and assigns, and any other person, corporation or organization acting in concert with any of them, are hereby permanently enjoined and restrained during the life of U.S. Patent No. 4,560,746 from infringing claims 1, 2, 3, 13 or 14 of U.S. Patent No. 4,560,746 by selling or manufacturing FD & C Red 40 and FD & C Yellow 6 made at a pH less than 9.01 and at pressures at the input to the first membrane of less than 500 p.s.i.g.

173a

This injunction shall become effective immediately. IT IS SO ORDERED.

/s/ Herman J. Weber
HERMAN J. WEBER
Judge
United States District Court

No. 95-728

Supreme Court, U.S.

DEC 8 1995

In The

# Supreme Court of the United States

October Term, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

VS.

HILTON DAVIS CHEMICAL CO.,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### RESPONDENT'S BRIEF IN OPPOSITION

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421

#### LIST OF PARTIES PURSUANT TO RULES 14.1(b) AND 29.6

The names of all parties in the court whose judgment is sought to be reviewed appear in the caption of this Brief.

Respondent has the following parent and subsidiary companies:

Freedom Chemical Company (parent)

A Chem (UK) Limited (subsidiary)

# TABLE OF CONTENTS

	Page
List of Parties Pursuant to Rules 14.1(b) and 29.6	( i
Table of Contents	ii
Table of Citations	ii
Counterstatement of the Case	1
Reasons for Denying the Writ	9
I. The question presented by Petitioner was answered by Graver Tank which remains uncontroversial good law.	9
II. The decision of the Federal Circuit is entitled to special deference.	18
III. Graver Tank is entirely consistent with the 1952 Patent Act and prior precedent	. 19
IV. The decision of the Federal Circuit accurately restates Graver Tank.	27
Conclusion	30
TABLE OF CITATIONS	
Cases Cited:	
American Permahedge, Inc. v. Barcana, Inc., 1995 U.S. Dist. LEXIS 15838 (S.D.N.Y. 1995)	13

	Page
Ames v. Howard, 1 F. Cas. 755 (C.C.D. Mass. 1833) (No. 326)	25
Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336(1961)	19
Autogiro Co. of America v. United States, 384 F.2d 391 (Ct. Cl. 1967)	14
Belding Mfg. Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894)	11
Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1988)	14
Brown v. Guild, 90 U.S. (23 Wall.) 181 (1874)	11
Burr v. Duryee, 68 U.S. (1 Wall.) 531 (1864)	11
Case v. Brown, 69 U.S. (2 Wall.) 320 (1864)	11
Christianson v. Colt Indus. Operating Corp., 486 U.S. 800 (1988)	18
Coupe v. Royer, 155 U.S. 565 (1895)	11
Duff v. Sterling Pump Co., 107 U.S. 636 (1883)	11
Edward Lowe Industries v. Oil-Dri Corp. of America, 1995 U.S. Dist. LEXIS 15136 (N.D. III. 1995)	12

#### W

# Contents

	Page
ELF Atochem N.A., Inc. v. Libbey-Owens-Ford Co., Inc., 894 F. Supp. 844 (D. Del. 1995)	13
Ex parte Cook, 1890 C.D. 81	25
Ford Motor Co. v. Summit Motor Products, Inc., 930 F.2d 277 (3d Cir. 1991), cert. denied, 112 S. Ct. 373 (1991).	29
General American Transp. Corp. v. Cryo-Trans, Inc., 897	
F. Supp. 1121 (N.D. Ill. 1995)	13
Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874)	11
Graham v. John Deere Co., 383 U.S. 1 (1966)	28
Graver Tank & Mfg. Co. v. Linde Air Products Co., 336 U.S. 271 (1949)	8
Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950)	passim
Gray v. James, 10 F. Cas. 1015 (C.C.D. Pa. 1817) (No. 5,718)	11
Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946)	22
HBB L.P. v. Ford Motor Co., 1995 U.S. Dist. LEXIS 14400 (N.D. Ill. 1995)	12, 13

	Page
Heath v. Umwin, 2 Websters Patent Cases 296 (H.L. 1855)	11
Hill v. Thompson And Forman, 1 Websters Patent Cases 239 (C.P. 1818)	11
Hughes Aircraft Co. v. United States, 717 F.2d 1351 (Fed. Cir. 1983)	17
Hydraflow v. Enindine, Inc., 1995 U.S. Dist. LEXIS 17128 (W.D.N.Y. 1995)	13
In re Donaldson Co., Inc., 16 F.3d 1189 (Fed. Cir. 1994) .	22
In re Wadlinger, 496 F.2d 1200 (CCPA 1974)	23
Imhaeuser v. Buerk, 101 U.S. 647 (1879)	11
Ives v. Hamilton, 92 U.S. 426 (1875)	11
Johnson v. Transportation Agency, Santa Clara County, California, 480 U.S. 616 (1986)	22, 24
Jurgens v. McKasy, 927 F.2d 1552 (Fed. Cir. 1991)	20
Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470 (1974)	27
Lorillard v. Pons, 434 U.S. 575 (1977)	22
Lucas Aerospace, Ltd. v. Unison Indus. L.P., 890 F. Supp. 329 (D. Del. 1995)	13

# Contents

	Page
Lucas Aerospace, Ltd. v. Unison Indus., L.P., 899 F. Supp. 126, 1995 U.S. Dist. LEXIS 13361 (D. Del. 1995)	13
Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), cert. granted, 116 S. Ct. 40 (1995)	13, 29
Mason v. Tampa G. Mfg. Co., 1995 U.S. App. LEXIS 28368 (Fed. Cir. 1995)	12
Mazer v. Stein, 347 U.S. 201 (1954)	16
Mercoid Corp. v. Mid-Continent Investment Co., 320 U.S. 661 (1944)	20
McCormick v. Talcott, 61 U.S. (20 How.) 402 (1858)	11
Midlantic National Bank v. N.J. Dept. of Environmental Protection, 474 U.S. 494 (1986)	21
Odiorne v. Winkley, 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,432)	11
Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211 (Fed. Cir. 1995)	12
Paper Bag Machine Co. v. Murphy, 97 U.S. 120 (1878)	11,12
Patterson v. McLean Credit Union, 491 U.S. 164 (1988)	10

	Page
Pennwalt Corp. v. Durand-Wayland, 833 F.2d 931 (Fed. Cir. 1987), cert. denied, 485 U.S. 961 (1988), cert. denied, 485 U.S. 1009 (1988)	22
Planned Parenthood of Southeastern Pa. v. Casey, 505 U.S. 833, 120 L. Ed. 2d 674 (1992)	11
Ramos v. Biomet, Inc., 1995 U.S. App. LEXIS 25872 (Fed. Cir. 1995)	12
Ramos v. Boehringer Mannheim Corp., 1995 U.S. App. LEXIS 25870 (Fed. Cir. 1995)	12
Rees v. Gould, 82 U.S. (15 Wall.) 187 (1871)	11
Roberts v. Ryer, 91 U.S. 150 (1875)	11
Royer v. Schultz Belting Co., 135 U.S. 319 (1890)	11, 29
Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929)	24, 28
Sewell v. Jones, 91 U.S. 171 (1875)	11
Seymour v. Osborne, 78 U.S. (11 Wall.) 516 (1870)	11,26
Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904)	11
Sloat v. Spring, 22 F. Cas. 330 (C.C.E.D. Pa. 1850) (No. 12,948a)	11

# Contents

	Page
South Corp. v. United States, 690 F.2d 1368 (Fed. Cir. 1982)	18
SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107 (Fed. Cir. 1985)	17
State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226 (Fed. Cir. 1985)	17
Stead v. Anderson, 1 Websters Patent Cases 151 (C.P. 1847)	11
Things Remembered, Inc. v. Petrarca, 1995 U.S. LEXIS 8531 (1995)	27
Total Containment, Inc. v. Environ Prods., Inc., 1995 U.S. Dist. LEXIS 17229 (E.D. Pa. 1995)	13
Turrill v. Michigan Southern & Northern Indiana Ry. Co., 68 U.S. 491 (1864)	25
Two Pesos, Inc. v. Taco Cabana, Inc., 505 U.S. 763 (1992)	29
Tyler v. Boston, 74 U.S. (7 Wall.) 327 (1868)	11,29
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Union Paper Bag Machine Co. v. Murphy, 97 U.S. 120	20.24

	Page
United States v. Fausto, 484 U.S. 439 (1988)	18
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(1990)	
Winans v. Denmead, 56 U.S. (15 How.) 330 (1853)1, 9, 11,	25, 29
Statutes Cited:	
4 Stat. 55 (1832)	23
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5 Stat. 119 (1836)	26
16 Stat. 198 (1870)	26
16 Stat. 201 (1870)	26
28 U.S.C. § 1295(a)(1)	18
35 U.S.C. § 46	23
35 U.S.C. § 103	20
35 U.S.C. § 112	22
35 U.S.C. § 251	22, 23
35 U.S.C. § 271	21,26

# Contents

	Page
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Article I § 8 clause 8	13
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H.R. Rep. No. 312, 97th Cong., 2d Sess. 23 (1981)	18
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Respondent respectfully requests that this Court deny the Petition to review the judgment of the United States Court of Appeals for the Federal Circuit in this case. The question posed by Petitioner has been answered repeatedly by this Court over the last 140 years, beginning with Winans v. Denmead, 56 U.S. (15 How.) 330 (1853), and culminating with the polestar decision in Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), which elegantly and definitively restated the wellestablished Doctrine of Equivalents in patent law. During the last 45 years, hundreds of trial and appellate courts have followed the clear principle of Graver Tank to assure that patent owners enjoy the full measure of their inventions. On August 6, 1995, the Court of Appeals for the Federal Circuit, charged by Congress to unify the patent law, after spirited debate, the enlightened wisdom of its full en banc membership, and the assistance of numerous amici curiae, restated the Graver Tank principle of the Doctrine of Equivalents as wise and pragmatic law.

Petitioner, by challenging the Doctrine of Equivalents itself, seeks to destroy one of the most important bulwarks underlying our country's patented technology. To deny certiorari in this case assures the continuance of this necessary rule of law. To grant certiorari, and to adopt the position of Petitioner, returns our technology to the dark ages where anyone can "practice a fraud on a patent" simply by making "unimportant and insubstantial changes" — an anathema to this Court's wisdom of Graver Tank.

#### **COUNTERSTATEMENT OF THE CASE**

This action involves a unique and valuable patent owned by Respondent, Hilton Davis. The patent covers an innovative complex chemical process for producing two specific synthetic red and yellow food dyes: FD&C (food, drug and cosmetic) Red 40 and FD&C Yellow 6.1 The patented process was the first to

These dyes are widely used as colorants in many popular food products including M&M's, Kool Aid and numerous soft drinks. Hilton Davis (Cont'd)

successfully purify these food dyes to the extremely high purity required by the FDA for human consumption without the use of a very costly and environmentally undesirable step known as "salting out". This laborious and expensive "salting out" process involved adding large quantities of rock salt to cause the dye to crystallize out of solution, filtering the crystalline dye in large filter presses to produce a semi-solid press cake, manually scraping the press cake from the filter, subjecting the press cake to a series of successively more dilute salt solution washes, redissolving the press cake in water, and finally evaporating the solution to produce the dry dye. The patented process eliminates most of those steps.

In 1982, the inventors of the patented process, Drs. Cook and Rebhahn, led the search for a commercially viable alternative to the "salting out" process. The inventors conceived a revolutionary approach using a membrane separation process, now known as "ultrafiltration," to separate the impurities in the dye solution from the dye molecules. A major concern was whether the new Hilton Davis process could remove the organic impurities, particularly the Schaeffer's salt impurity, because of the small differences in size between the impurity molecules and the dye molecules.

Hilton Davis hired Osmonics under a secrecy agreement to test the new process under the direction and supervision of Dr. Cook on a Red 40 solution prepared by Hilton Davis. It immediately became apparent that Osmonics lacked the experience to remove organic impurities from dyes, or to purify dyes to the level of purity required by Hilton Davis to meet stringent FDA specifications. Following the test, Dr. Cook analyzed the test results and determined that the test was unsuccessful in meeting Hilton Davis' objectives. At that point,

(Cont'd) and Warner-Jenkinson are the only domestic producers of these important dyes.

Dr. Cook made the critical and inventive realization that the essence of a viable process was to obtain a proper trade-off between dye loss and impurity removal. To validate this ingenious discovery, Dr. Cook instructed Osmonics to perform a second test with changes to the membranes and test procedures which he specified.

This second test of the Hilton Davis Red 40 dye solution by Osmonics under the direction of Dr. Cook in October 1982 was successful. Subsequently, the Yellow 6 dye solution was successfully purified using the Hilton Davis process under Dr. Cook's direction in January 1983. Osmonics had nothing to do with the invention of the Hilton Davis process for purifying either of these dyes.

Drs. Cook and Rebhahn then filed their initial patent application based on the October 1982 and January 1983 tests. After extensive further in-house testing by Dr. Cook, Hilton Davis filed a continuation-in-part (CIP) application claiming a broader range of membranes. The final claim language incorporated the specific combination of process conditions found by Dr. Cook to meet his objectives, particularly tradeoffs which he had discovered between dye loss and the amount of impurities passing the membranes to produce an efficient, commercially practical purification process.

Claim 1 of the Hilton Davis patent, which issued in 1985, reads in part as follows:

In a process for the purification of a dye selected from [a group including Red 40 and Yellow 6] ... the improvement which comprises: subjecting an aqueous solution ... to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of

approximately 200 to 400 p.s.i.g., at a pH of approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing [through] said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate ... recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.

During prosecution of the Hilton Davis patent application, the Patent Office initially rejected the claims as obvious in view of the prior art Booth patent. To distinguish from the Booth patent, Hilton Davis noted four important distinctions: (1) the enormous differences between the molecular weights of the dyes purified by Booth and those purified by the Hilton Davis process; (2) the intentional addition of salt to the solution required by the Booth process, antithetical to the elimination of "salting out"; (3) the very high pH ranges deliberately required in the Booth process (above 9.0 and preferably 11-13), in contrast to the relatively low pHs used in the Hilton Davis process (below 9.0); and (4) the very low pressures used in the Booth process (25-200 p.s.i.g., preferably 75-125 p.s.i.g.), in contrast with the much higher pressures required by the Hilton Davis process: 200-400 p.s.i.g. After that combination of distinguishing features was pointed out to the Patent Examiner, the Hilton Davis patent issued.2

Warner-Jenkinson developed its infringing process on a parallel, but not completely independent, path. In 1978, Warner-Jenkinson unsuccessfully experimented with the Booth process, which used "salting out", and completely abandoned its process development efforts until August 1982. After resuming work, Warner-Jenkinson unsuccessfully tested a filtration process at Osmonics which continued to incorporate a "salting out" step. After this failure, Warner-Jenkinson, unable to produce a viable process, again abandoned work on filtering Red 40 and Yellow 6.

In 1986, after four years of inactivity, and under very suspicious circumstances, Warner-Jenkinson unexpectedly demonstrated a process which eliminated the "salting out" step by using the patented Hilton Davis process. This sudden success was no coincidence. Osmonics used confidential information learned during testing of the Hilton Davis process under the direction of Dr. Cook to overcome the deficiencies in the failed Warner-Jenkinson process. Even more remarkable, the infringing Warner-Jenkinson process used the same equipment and membranes as the Hilton Davis process. There was clear evidence presented below that the Warner-Jenkinson process was not developed independently, but was derived in its most critical and necessary attributes from the Hilton Davis process.

<sup>2.</sup> In its opinion, the Federal Circuit states that "[t]the inventors added the phrase 'at a pH from approximately 6.0 to 9.0' during prosecution to distinguish [the Booth patent]." 62 F.3d at 1515-16. This statement is not entirely correct. The Court later correctly explained that the pH range was added to avoid the disclosure in Booth of a process operating at a pH higher (Cont'd)

<sup>(</sup>Cont'd)

than 9. Consequently, while the claim amendment surrendered pHs above 9, it did not bar Hilton Davis from ascertaining the equivalency to processes operating at pHs below 6. Id. at 1525. Petitioner incorrectly asserts the claims were amended to recite 'a hydrostatic pressure of approximately 200 to 400 p.s.i.g.'. Pet. Br. at 5. That claim requirement was present in the application ab initio and was not added during prosecution to distinguish the Hilton Davis invention from the prior art.

<sup>3.</sup> Using confidential information learned from Hilton Davis during the successful tests of the patented process, Osmonics recognized the deficiencies in the failed Warner-Jenkinson process. Osmonics subsequently achieved success in the Warner-Jenkinson process only after the process was modifed to use critical membranes and process parameters like Hilton Davis employed.

Warner-Jenkinson's deliberate use of the Hilton Davis process did not stop there. Even after learning of the Hilton Davis patent and warned of infringement, Warner-Jenkinson continued infringing. Rather than independently designing a clearly noninfringing process, Warner-Jenkinson doggedly sold enormous quantities of dyes made by the patented process.

The Warner-Jenkinson process uses a purification technique for purifying Red 40 and Yellow 6 which is equivalent to that claimed in the Hilton Davis patent, operating at a pH of 5-6 (the equivalent of the claimed pH of 6-9) and at a pressure of 200-500 p.s.i.g. (the equivalent of the claimed 200-400 p.s.i.g). In fact, Warner-Jenkinson actually operated its process near, if not at pH 6, and in many instances with a pressure within the range of 200-400 p.s.i.g. supporting a finding of literal infringement of these claim limitations.

In the infringing Warner-Jenkinson process, the "function" of the pH is to: (1) prevent damage to the membrane; (2) produce a more or less neutral product required by the FDA; (3) be compatible with the chemistry of the process; and (4) destroy triazine. Warner-Jenkinson operated its infringing process with a pH meeting these functions. As to the "way" requirement, in the patented process, the pH is adjusted after coupling by means of an acid to obtain the desired value, just as in the infringing process. The "result" of utilizing the appropriate pH is that the membrane is not destroyed, the process operates to produce certifiable dyes, and triazine is destroyed — results achieved in the infringing process. Consequently, the Graver Tank function/way/result test is clearly met.

As to the pressure requirement, the "function" of the pressure is to exert sufficient force on the dye mixture applied to the upstream side of the membrane to overcome the osmotic pressure to drive water and impurities through the membrane at an economically useful rate. The "way" in which this function is achieved is by overcoming the osmotic pressure with additional pressure to force the water and impurities through the membrane while retaining the dye. The "result" achieved is that the water and impurities are removed to obtain a dye of a particular quality and dye concentration suitable for spray drying. Warner-Jenkinson's process used a functionally equivalent pressure meeting the *Graver Tank* test.

In its Petition, Warner-Jenkinson creates the misleading impression that its process is fundamentally different from Hilton Davis'. The jury, the District Court and the en banc Federal Circuit all found otherwise: the differences between the patented and infringing process are no more than insubstantial.<sup>5</sup>

At trial, Hilton Davis pursued infringement under the Doctrine of Equivalents. After extensive evidence offered over nine days with nine expert and technical fact witnesses, the jury was properly instructed on the application of the Doctrine of Equivalents, particularly the function/way/result test.

The jury deliberated for several days, returning a verdict supported by nine special verdicts. The jury found that the Hilton Davis patent remained valid, that Warner-Jenkinson infringed

<sup>4.</sup> Warner-Jenkinson argues that it avoids infringement by operating at a lower pH which would cause so-called "foaming" in the Hilton Davis process. If one of the functions of pH is to prevent "foaming", the infringing Warner-Jenkinson process accomplishes that function. Moreover, the patented process was successfully tested to pH values as low as 2.2 with no effect on the process because of "foaming."

<sup>5.</sup> Warner-Jenkinson's approach is sometimes known as "tickling" the patent — a practice used by unscrupulous competitors to come as close as possible to a patented invention to obtain its benefits by making unimportant and insubstantial changes and substitutions — a practice condemned by this Court in Graver Tank, 339 U.S. at 607.

Petitioner does not challenge the equivalence of several other claim limitations in addition to pH and pressure, e.g., pore size and acid.

under the Doctrine of Equivalents' (although not willfully), and awarded 20% of Hilton Davis' request for damages.

Briefing on Warner-Jenkinson's post trial motions consumed over 400 pages. The trial court denied those motions in a carefully reasoned oral opinion, holding specifically that there was substantial evidence to support the jury's finding of infringement under the Doctrine of Equivalents. The court also entered a narrowly drawn permanent injunction which permitted Warner-Jenkinson to continue practicing its process for Red 40 and Yellow 6 at a pressure above 500 p.s.i.g. or at a pH above 9.01. Within weeks after the entry of the injunction, Warner-Jenkinson was able to modify its process to be allegedly non-infringing.

On appeal, a panel of the Federal Circuit heard oral argument on July 9, 1993. Subsequently, the court decided sua sponte to hear the appeal en banc to answer three specific questions:

1. Does a finding of infringement under the Doctrine of Equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, and (c) result, the so-called triple identity test of Graver Tank v. Linde Air Prods. Co., 339 U.S. 605 (1950), and cases relied on therein? If yes, what?

- 2. Is the issue of infringement under the Doctrine of Equivalents an equitable remedy to be decided by the Court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case?
- 3. Is application of the Doctrine of Equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of the claim, discretionary in accordance with the circumstances of the case?

In its opinion of August 6, 1995, reported at 62 F.3d 1512, the Federal Circuit answered the first question that "the finding of infringement under the Doctrine of Equivalents requires proof of insubstantial differences between the claimed and accused products or processes." 62 F.3d at 1521-22. In answer to the second question, "infringement under the doctrine of equivalents is an issue of fact to be submitted to the jury in a jury trial with proper instructions, and to be decided by the judge in a bench trial." Id. at 1522. In answer to the third question, "[t]he trial judge does not have discretion to choose whether to apply the doctrine of equivalents when the record shows no literal infringement." Id. In addressing the merits of the appeal, the enbanc Federal Circuit affirmed per curiam "[b]ecause substantial evidence supports the jury verdict of infringement." Id. at 1515.

#### REASONS FOR DENYING THE WRIT

I. THE QUESTION PRESENTED BY PETITIONER WAS ANSWERED BY GRAVER TANK WHICH REMAINS UNCONTROVERSIAL GOOD LAW.

The question presented by Petitioner has been answered repeatedly in the affirmative by this Court over the last 140 years, beginning with Winans v. Denmead, 56 U.S. (15 How.) 330

<sup>7.</sup> Infringement under the Doctrine of Equivalents is a question of fact. Graver Tank 339 U.S. at 609. Since two courts have already considered these facts, they cannot be reconsidered. Graver Tank & Mfg. Co. v. Linde Air Products Co., 336 U.S. 271, 275 (1949).

In a separate opinion, the Court of Appeals panel affirmed the District Court's decisions on post-trial motions involving validity. Warner-Jenkinson does not seek review of that ruling. Pet. Br. at 7, n.6.

<sup>9.</sup> Warner-Jenkinson was enjoined "from infringing claims 1, 2, 3, 13 or 14 of [the Hilton Davis patent] by selling or manufacturing FD&C Red 40 and FD&C Yellow 6 made at a pH less than 9.01 and at pressures at the input to the first membrane of less than 500 p.s.i.g." Pet. App. at 172a.

(1853), and culminating with the Graver Tank decision. In that decision, this Court definitively ruled that infringement may be established where the accused device "performs substantially the same function in substantially the same way to obtain the same result," Graver Tank, 339 U.S. at 608 (quoting Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929)). This is the classic definition of the Doctrine of Equivalents. The Court reasoned that "to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing." Id. at 607. What Petitioner truly seeks here, without any valid reason, is the extermination of the Doctrine of Equivalents by having this Court overturn Graver Tank and its venerable predecessors and, as a result, the evisceration of the United States patent system. In the court below, none of the concurring or dissenting opinions or the many amici curiae suggested such Draconian measures. Nor has special justification been shown for overruling Graver Tank. The type of weakened conceptual underpinnings, irreconcilable competing legal doctrines or policies, inherent confusion created by an unworkable decision, direct obstacles to important objectives in other laws, or inconsistency with sense of justice or social welfare, which justify overruling precedent, do not exist in this case. See Patterson v. McLean Credit Union, 491 U.S. 164, 173-74 (1988). In the decision below, the Federal Circuit — the court created by Congress to bring consistency and coherence to patent law - has acted "to restate - not to revise - the test for infringement under the doctrine of equivalents." 62 F.3d at 1516. It is a waste of this Court's scarce judicial resources to simply revisit and again restate the well-established Graver Tank principle.

This Court's decision in Graver Tank did not spring forth on a sudden whim. Rather, Graver Tank is a well-reasoned unexceptional restatement of the Doctrine of Equivalents

established by a long line of prior precedent. This Doctrine had even more basic roots in the English Common Law. An acknowledgement of equivalency can be found in a patent granted by English Parliament in 1695. Christine MacLeod, Inventing the Industrial Revolution: The English Patent System 1660-1800 73 (1988). In spite of this long and unbroken history, and without sound justification, Petitioner asserts this Court should "revisit" the Doctrine of Equivalents. Such "revisiting" is unwarranted. 12

- 11. See, e.g., Heath v. Umwin, 2 Websters Patent Cases 296 (H.L. 1855); Stead v. Anderson, 1 Websters Patent Cases 151 (C.P. 1847); Hill v. Thompson And Forman, 1 Websters Patent Cases 239 (C.P. 1818).
  - 12. The obligation to follow precedent begins with necessity, and a contrary necessity marks its outer limit. With Cardozo, we recognized that no judicial system could do society's work if it eyed each issue afresh in every case that raised it. Indeed, the very concept of the rule of law underlying our own Constitution requires such continuity over time that a respect for precedent is, by definition, indispensable.

Planned Parenthood of Southeastern Pa. v. Casey, 505 U.S. 833, 120 L. Ed. 2d 674, 699 (1992).

<sup>10.</sup> See Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929); Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904); Coupe v. Royer, 155 U.S. 565 (1895); Belding Mfg. Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894); Royer v. Schultz Belting Co., 135 U.S. 319 (1890); Imhaeuser v. Buerk, 101 U.S. 647 (1879); Paper Bag Machine Co. v. Murphy, 97 U.S. 120, 125 (1878); Ives v. Hamilton, 92 U.S. 426 (1875); Sewell v. Jones, 91 U.S. 171 (1875); Duff v. Sterling Pump Co., 107 U.S. 636 (1883); Roberts v. Ryer, 91 U.S. 150 (1875); Brown v. Guild, 90 U.S. (23 Wall.) 181 (1874); Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874); Rees v. Gould, 82 U.S. (15 Wall.) 187 (1871); Seymour v. Osborne, 78 U.S. (11 Wall.) 516 (1870); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868); Case v. Brown, 69 U.S. (2 Wall.) 320 (1864); Burr v. Duryee, 68 U.S. (1 Wall.) 531 (1864); McCormick v. Talcott, 61 U.S. (20 How.) 402 (1858); Winans v. Denmead, 56 U.S. (15 How.) 330 (1853); Sloat v. Spring, 22 F. Cas. 330, 334 (C.C.E.D. Pa. 1850) (No. 12,948a); Gray v. James, 10 F. Cas. 1015 (C.C.D.Pa. 1817) (No. 5,718); Odiorne v. Winkley, 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,432).

As this history demonstrates, the Doctrine of Equivalents as reiterated by Graver Tank was not revolutionary as Petitioner contends, nor is it revolutionary today as reiterated by the Federal Circuit — no principle is more ingrained in patent jurisprudence. The basic premise of the Doctrine of Equivalents — that if the differences between two devices (or processes) are only insubstantial, then the devices "are the same, even though they differ in name, form, or shape" (Graver Tank, 339 U.S. at 608) — has long been the law of the land. See, e.g., Paper Bag Machine Co. v. Murphy, 97 U.S. 120, 125 (1878) ("if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape.")

Contrary to Petitioner's unsupported contentions, there is no evidence that the Doctrine of Equivalents, as consistently applied by United States courts for the last 140 years, has "complicated," "lengthened," or "spurred" patent infringement litigation. See, e.g., Sean T. Moorhead, Note, The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement or the Second Prong of Patent Infringement Charges?, 53 OHIO ST. L.J. 1421, 1449 (1992) [hereinafter Moorhead] (noting that the Doctrine of Equivalents will "serve the system well" and will not be a cause of increased litigation). Since it was decided, over 800 cases have cited Graver Tank and applied the Doctrine of Equivalents, without apparent concern. For 45 years, this Court has not seen the need to revisit the Doctrine of Equivalents. Not a single reported opinion citing the Federal Circuit's decision below has expressed concern about complications, uncertainty, or any other of the horribles envisioned by Petitioner.13 These courts do not view the Federal Circuit's decision as expanding or otherwise revising the law of infringement. Rather, the courts perceive the decision as clarifying, rather than complicating, the law. See Lucas Aerospace, 1995 U.S. Dist. LEXIS at \*35 (Hilton Davis reiterates "relevant gauges" to determine substantiality of differences). Petitioner's notions of impending doom and chaos in the patent system are overblown.<sup>14</sup>

History has shown that the Doctrine of Equivalents advances and promotes several important policies of the United States patent system including protecting the patentee from unlawful infringement and encouraging technological innovation. Article I § 8 clause 8 of the United States Constitution authorizes Congress "[t]o promote the progress of Science and useful Arts, by securing for limited times to . . . inventors the exclusive right to their . . . discoveries." To implement this fundamental principle, the federal patent system "embodies a carefully crafted

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Ford Motor Co., 1995 U.S. Dist. LEXIS 14400 at \*21-\*22 (N.D. III. 1995); General American Transp. Corp. v. Cryo-Trans, Inc., 897 F. Supp. 1121, 1125 n.3 (N.D. III. 1995); Lucas Aerospace., Ltd. v. Unison Indus., L.P., 899 F. Supp. 126, 1995 U.S. Dist. LEXIS 13361 at \*34-\*36 (D. Del. 1995); American Permahedge, Inc. v. Barcana, Inc., 1995 U.S. Dist. LEXIS 15838 at \*14-\*16 (S.D.N.Y. 1995); Total Containment, Inc. v. Environ Prods., Inc., 1995 U.S. Dist. LEXIS 17229, at \*88, \*103-04 (E.D. Pa. 1995); Hydraflow v. Enidine, Inc., 1995 U.S. Dist. LEXIS 17128 at \*38 (W.D.N.Y. 1995)

14. In contrast, the Federal Circuit's decision in Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), cert. granted, 116 S. Ct. 40 (1995), immediately generated substantial concern. See, e.g., Lucas Aerospace, Ltd. v. Unison Indus. L.P., 890 F. Supp. 329, 332 n.3, 333-34 n.7 (D. Del. 1995) (noting that Markman "leaves the reader, and the reviewing court, uninformed" and that Markman, creates a "practical problem in courtroom administration" that the court "confessedly does not know how to solve."); see also ELF Atochem N.A., Inc.v. Libbey-Owens-Ford Co., Inc., 894 F. Supp. 844, 857 (D. Del. 1995). No similar judicial criticism exists in the wake of the present case.

<sup>13.</sup> See, e.g., Mason v. Tampa G. Mfg. Co., 1995 U.S. App. LEXIS 28368 at \*12 (Fed. Cir. 1995); Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1218 (Fed. Cir. 1995); Ramos v. Biomet, Inc., 1995 U.S. App. LEXIS 25872 at \*7 (Fed. Cir. 1995); Ramos v. Boehringer Mannheim Corp., 1995 U.S. App. LEXIS 25870 at \*4 (Fed. Cir. 1995); Edward Lowe Industries v. Oil-Dri Corp. of America, 1995 U.S. Dist. LEXIS 15136 at \*26 (N.D. III. 1995); HBB L.P. v. (Cont'd)

bargain for encouraging the creation and disclosure of new, useful, and nonobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years." Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 150-51 (1988); Stephen G. Kalinchak, Obviousness and the Doctrine of Equivalents in Patent Law: Striving for Objective Criteria, 43 CATH. U.L. Rev. 577, 580 (1994). The Doctrine of Equivalents has evolved from a balancing of competing policies that support this constitutional purpose "to promote the progress of Science and the useful Arts," including protecting the inventor from appropriations of the invention that barely avoid the literal language of the claims. Only "insubstantial changes" constitute infringement under the Doctrine of Equivalents. Graver Tank, 339 U.S. at 607; Sanitary Refrigerator Co., 280 U.S. at 42; Union Paper Bag Machine Co., 97 U.S. at 125; Hilton Davis, 62 F.3d at 1517, 1521-22. Accordingly, the Doctrine of Equivalents is necessary to "benefit the inventor's genius and not the scrivener's talents." Autogiro Co. of America v. United States, 384 F.2d 391, 399 (Ct. Cl. 1967). The Doctrine of Equivalents does not interfere with this policy or bargain.

Contrary to Petitioner's unsupported argument, the Doctrine of Equivalents is indispensable to a meaningful patent system because its application ensures that a patentee receives the full measure of protection against infringement to which he is legally entitled. The decision below expressly notes that this Court "explained in Graver Tank that the doctrine of equivalents prevents the unfairness of depriving the patent owner of effective protection of its invention." 62 F.3d at 1521. The Doctrine of Equivalents ensures that a patentee can receive full protection for his patented ideas by making it difficult for a copier to simply maneuver around a patent's claims by making only "insubstantial changes". Ronald E. Larson, Balancing the Competing Policies Underlying the Doctrine of Equivalents in Patent Law, 21 A.I.P.L.A. Q.J. 1, 11 (1993). As between a patent's functions of

"providing notice to the public" and "protecting the patentee", the latter, because it is constitutionally mandated, is more important and should, accordingly, be given more weight when a court must choose between the two. See, supra, Moorhead at 1427. Graver Tank recognized that protecting the patentee and providing the full benefit of the patented invention was paramount: "[t]he essence of the doctrine [of equivalents] is that one may not practice a fraud on a patent." Graver Tank, 339 U.S. at 608. The balance thus struck by Graver Tank is uncontroversial.

Although the United States has long recognized the importance of protecting a patentee's rights through the Doctrine of Equivalents, many foreign patent systems lack such protection; accordingly, "foreign patents are often so restricted in their protection that they are of insignificant or no commercial value." B. Pravel, Why the United States Should Adopt the Firstto-File System for Patents, 22 St. MARY'S L.J. 797, 807 (1991). Without the Doctrine of Equivalents, it would be impossible to obtain meaningful protection for an invention against a competitor who makes only insubstantial and unimportant changes. 15 If, as Petitioner advocates, the Doctrine of Equivalents were to be eliminated from the United States patent scheme, the constitutionally mandated goal of "protecting the patentee" would be seriously undermined. More than 1.5 million presently unexpired patents written with the expectation of protection against infringement through the Doctrine of Equivalents would be thrown into question and significantly devalued.

The continued viability of the Doctrine of Equivalents is also necessary to encourage innovation and to spur technological progress. In order to encourage inventors to expand new technology frontiers, "the potential return [of seeking patent

<sup>15. &</sup>quot;Japan has virtually no Doctrine of Equivalents" and is "a good example of why the Doctrine of Equivalents is so important." See, supra, Moorhead at 1444, n.125.

protection] must warrant the risk." Hilton Davis, 62 F.3d at 1531 (Newman, J., concurring). The advancement of the greater public interest must be a goal of the United States patent system. Id.; See also Mazer v. Stein, 347 U.S. 201, 219 (1954):

The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance public welfare through the talents of authors and inventors in Science and useful Arts. Sacrificial days devoted to such creative activities deserve rewards commensurate with the services rendered.

If inventors are not adequately protected from infringement, they will choose to keep their inventions secret rather than disclosing them through the patent system. If that occurs, the promotion of "the Progress of Science and useful Arts" will fall by the wayside because the body of public domain knowledge, in the form of expired patents, will cease to grow. See, supra, Moorhead at 1427.

If a patentee were accorded patent protection only for the specific and literal language of his claimed invention, she would likely forego investing the necessary economic resources necessary to develop and exploit the invention. "[T]he economic risk in developing new technology is high, ... the potential return must warrant the risk, and ... the return must pay for the failures as well as the successes." Hilton Davis, 62 F.3d at 1531 (Newman, J., concurring). Narrowing the patent right by eliminating the Doctrine of Equivalents would make the entire patenting process unprofitable and eliminate the incentive to innovate. Kurt Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv. J. Law and Tech. 281, 328 (1994) [hereinafter Scope of the Doctrine].

Without a meaningful Doctrine of Equivalents, an infringer could "tickle" the patent by manufacturing, using, or selling a product that is the same as the patented invention and not be held liable for infringement. A patent would be nothing more than a roadmap to insubstantial changes. As the decision below recognizes, this would "encourage infringers 'to make unimportant and insubstantial changes and substitutions in the patent, which, though adding nothing, would be enough . . . [to evade] the reach of law'." Hilton Davis, 62 F.3d at 1517 (quoting Graver Tank, 339 U.S. at 607). If patent protection were not available in such circumstances, there would be no incentive to innovate and inventors would be disinclined to continue to push the technological envelope.

Additionally, "[t]he ability of the public successfully to design around - to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art - is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention." Id. at 1520. "Designing around 'is the stuff of which competition is made and is supposed to benefit the consumer'." Id. (quoting State Indus., Inc. v. A.O. Smith Corp., 751 F.2d 1226, 1236 (Fed. Cir. 1985)); See also, supra, Scope of the Doctrine at 292. This is particularly true in rapidly changing fields of technology, such as microelectronics and biological engineering, where "the doctrine of equivalents today serves the unexpected purpose of being the only readily available tool for application of the law to new technologies." Hilton Davis, 62 F.3d at 1532 (Newman, J., concurring). Because future technological advances cannot be known at the time a patent application is filed, it would be impossible to describe and claim them. See SRI Int'l v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 (Fed. Cir. 1985); Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1365 (Fed. Cir. 1983). If the Doctrine of Equivalents were not available today to protect inventors in rapidly changing high technology fields, the incentive to innovate would be severely chilled.

# II. THE DECISION OF THE FEDERAL CIRCUIT IS ENTITLED TO SPECIAL DEFERENCE.

The Federal Circuit is a highly specialized tribunal, created "to reduce the widespread lack of uniformity and uncertainty of legal doctrine that exist[ed] in the administration of patent law." Christianson v. Colt Indus. Operating Corp., 486 U.S. 800, 813 (1988) (quoting H.R. Rep. No. 312, 97th Cong., 2d Sess., at 23 (1981)). The Federal Circuit has exclusive nationwide jurisdiction of appeals in patent cases. 28 U.S.C. § 1295(a)(1). Because of this congressional mandate, this Court has recognized that Federal Circuit decisions are entitled to particular deference. United States v. Fausto, 484 U.S. 439, 464 (1988) ("Because of the unique character of the Federal Circuit, its conclusions are entitled to special deference by this Court. . . . Because its jurisdiction is confined to a defined range of subjects, the Federal Circuit brings to the cases before it an unusual expertise that should not lightly be disregarded.") (Stevens, J., dissenting). 16

In the present case, the Federal Circuit has performed its statutory duty by restating the Graver Tank Doctrine of Equivalents, a principle unique to patent law. This is the exclusive appellate domain of the Federal Circuit. Whatever disagreement may have existed among a minority of that court about the Doctrine of Equivalents has been laid to rest by the en banc decision below. This Court should not disturb a decision by the court charged by Congress to unify the patent law, after spirited debate<sup>17</sup>, the enlightened wisdom of its full en banc membership,

and the assistance of numerous amici curiae, which simply restates the Graver Tank Doctrine of Equivalents as wise and pragmatic law. Given the special expertise of the Federal Circuit on pure questions of patent law, it seems unlikely that this Court, which only rarely reviews such issues, could provide clearer guidance. Moreover, given that lower courts have experienced no difficulty in applying Hilton Davis and Graver Tank, it is entirely in accord with the congressional mandate and this Court's recognition of the Federal Circuit's special expertise to abstain from immediate review of the Hilton Davis decision until sufficient time has passed that the lower courts and the patent bar can assess its true impact, if any. Since the Federal Circuit's decision has not been decided "in a way that conflicts with relevant decisions of this Court," Sup. Ct. R. 10(c), there is no need to waste scarce judicial resources on reviewing a question that has been correctly and consistently answered for more than 40 years.

#### III. GRAVER TANK IS ENTIRELY CONSISTENT WITH THE 1952 PATENT ACT AND PRIOR PRECEDENT.

Petitioner argues that this Court should overturn Graver Tank because the 1952 Patent Act eliminated the Doctrine of Equivalents. Since Petitioner failed to raise that issue below, Respondent objects to this argument being made here for the first time. Further, and without waiving that objection, this Court has already disposed of that argument: "§ 271(a) of the new Patent Code [of 1952], which defines 'infringement,' left intact the entire body of case law on direct infringement." Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342(1961). Giles Rich, one of the principal drafters of the 1952 Act and now a

<sup>16.</sup> The special patent expertise of the Federal Circuit incorporates that of its predecessor, the Court of Customs and Patent Appeals. South Corp. v. United States, 690 F.2d 1368, 1370 (Fed. Cir. 1982) (en banc).

<sup>17.</sup> The debate, as reflected in the Court's three questions, was fundamentally over the role of juries in deciding factual equivalence questions, not about the continued existence of the Doctrine or the wisdom of Graver Tank.

<sup>18.</sup> The 1952 Patent Act added 35 U.S.C. § 271, which was the first statutory provision for patent infringement. S. Rap. No. 1979, 82d Cong., 2d Sess., reprinted in 1952 U.S.C.C.A.N. 2394, 2402 [hereinafter 1952 U.S.C.C.A.N.].

member of the Federal Circuit, explained: "[p]aragraph [271](a) defines direct infringement and is present only for the sake of completeness. We got along without it for 162 years and we could again. Its omission would change nothing." Giles Rich, Infringement Under Section 271 of the Patent Act of 1952, 35 J. PAT. OFF. Soc'y 476, 491 (1953) [hereinafter Infringement Under § 271]. "Infringement" includes both literal infringement and infringement by equivalents. Union Paper Bag Machine Co., 97 U.S. at 120; Jurgens v. McKasy, 927 F.2d 1552, 1560 (Fed. Cir. 1991) (Rich, J.) It is thus clear that this legislation did not affect the existing body of law underlying the Doctrine of Equivalents. Indeed, the 1952 Act tacitly adopted Graver Tank by not repudiating it.

The principal purpose of the 1952 Patent Act was "the codification of title 35, United States Code, and involves simplification and clarification of language and arrangement." 1952 U.S.C.C.A.N. at 2397. Notably, the Act and its legislative history make no express change in the then-existing law of the Doctrine of Equivalents. In fact, the portions of the Act relating to infringement expanded the patent protection by overturning certain Supreme Court decisions (e.g., Mercoid Corp. v. Mid-Continent Investment Co., 320 U.S. 661 (1944)) which unduly restricted the rights of the patent owner in areas of contributory infringement and patent misuse.19 1952 U.S.C.C.A.N. at 2402; see also, supra, Infringement Under § 271 at 479, 489-90 ("[i]ts purpose is to correct an injustice and restore the equal protection of the patent law to all the types of inventions on which the statute authorizes the grant of patents"). In fact, Graver Tank was one of the few cases of its era where this Court did not restrict patent rights, and should therefore be given great deference in accord with congressional intent behind the 1952 Act. See Karl B. Lutz, The New 1952 Patent Statute, 35 J. Pat. Off. Soc'y 155, 156-57 (1953) ("[C]ongress, being cognizant of this changed attitude of the courts, has inserted in the new act some provisions which codify the 'common law' of patents as it existed prior to the recent apostasy from the benevolent policy of the Constitution").

Petitioner contends that congressional silence on the Doctrine of Equivalents in § 271 overturns prior precedent of this Court. It is illogical and at odds with basic principles of statutory interpretation to argue that while Congress expressly broadened protection afforded to patent owners in some areas, it silently retracted others. "The normal rule of statutory construction is that if Congress intends for legislation to change the interpretation of a judicially created concept, it makes that intent specific." Midlantic National Bank v. New Jersey Dept. of Environmental Protection, 474 U.S. 494, 501 (1986). Since there is no evidence that Congress has ever considered legislation affecting the Doctrine of Equivalents, it must be assumed that the rule of Graver Tank and its predecessors is correct. Johnson v. Transportation Agency, Santa Clara County, California, 480 U.S. 616, 629 n.7 (1986) ("Congress has not amended the statute to reject our construction, nor have any such amendments even been proposed, and we therefore may assume that our interpretation was correct.") This Court has instructed:

Congress is presumed to be aware of an administrative or judicial interpretation of a statute and to adopt that interpretation when it re-enacts a statute without change. [cites omitted] So too, where as here, Congress adopts a new law incorporating sections of a prior law, Congress normally can be presumed to have had knowledge of the

<sup>19.</sup> Cf., the addition of § 103 (requiring that an invention be nonobvious) which "for the first time in our statute, provides a condition which exists in the law and has existed for more than 100 years, but only by reason of decisions of the courts." 1952 U.S.C.C.A.N. at 2399. No comparable addition was made for the Doctrine of Equivalents, which had also existed "for more than 100 years."

interpretation given to the incorporated law, at least insofar as it affects the new statute.

Lorillard v. Pons, 434 U.S. 575, 580-86 (1977).

Petitioner incorrectly argues that the term "equivalents" in 35 U.S.C. § 112¶620 evidences congressional intent to eliminate protection under the Doctrine of Equivalents. This provision was enacted not to affect the Doctrine of Equivalents, but to statutorily overturn Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946). In re Donaldson Co., Inc., 16 F.3d 1189, 1194 (Fed. Cir. 1994) (en banc). Further, the "equivalent" of 35 U.S.C. § 112 ¶ 6 is not related to the Doctrine of Equivalents. Pennwalt Corp. v. Durand-Wayland, 833 F.2d 931, 934 (Fed. Cir. 1987) (en banc) ("[s]ection 112, paragraph 6, plays no role in determining whether an equivalent function is performed by the accused device under the doctrine of equivalents"), cert. denied, 485 U.S. 961 (1988), and cert. denied, 485 U.S. 1009 (1988). 35 U.S.C. §112 ¶ 6 defines literal infringement, and requires that a court find identity of the claimed function in the accused device. Id. If literal infringement or identity of function is not present, infringement may nevertheless still be found under the Doctrine of Equivalents. Id. To suggest that §112 ¶ 6, eliminates the Doctrine of Equivalents is inconsistent with the legislative history and prior decisions. Moreover, as Petitioner acknowledges, Congress was aware of the Doctrine of Equivalents when it enacted §112 ¶ 6. Pet. Br. at 25; hence, it is presumed that Congress' failure to repudiate Graver Tank is tacit recognition of its continued viability. Johnson, 480 U.S. at 629; Lorillard, 434 U.S. at 580-81.21

If as Petitioner asserts, the Doctrine of Equivalents is flawed and inconsistent with the patent statues, Congress would certainly have addressed these alleged shortcomings in the last 45 years:

[T]he powers of Congress to legislate upon the subject of patents is plenary by the terms of the Constitution, and as there are no restraints on its exercise, there can be no limitation of their right to modify [the patent laws] at their pleasure, so long as they do not take away the rights of property in existing patents. McClurg v. Kingsland, 42 U.S. (1 How.) 202, 206 (1843).

(Cont'd)

sort of correction of mistakes that the judicial doctrine of equivalents serves to accomplish." Pet. Br. at 26. Reissue is designed to correct mistakes where a "patent is . . . deemed wholly or partially inoperative or invalid . . . by reason of the patentee claiming more or less than he had a right to claim." 35 U.S.C. § 251. The patentee "may obtain a new patent to replace the old one." 1952 U.S.C.C.A.N. at 2400. The purpose of the Doctrine of Equivalents is not to correct mistakes, but to prevent an infringer from making "unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law." Graver Tank, 339 U.S. at 607. "[S]ome technologic variants can be reached only through litigation invoking the doctrine of equivalents." Hilton Davis, 62 F.3d at 1536 (Newman, J., concurring.) Further, Patent reissue statutes were enacted in 1832 (4 Stat. 55), 1836 (5 Stat. 117) and 1946 (35 U.S.C. § 46). The 1952 Act did not change the types of errors for which reissue could be sought. In re Wadlinger, 496 F. 2d 1200, 1207 n.7 (CCPA 1974) (Rich, J.); see also Union Asbestos & Rubber Co. v. Paltier Corp., 298 F.2d 48, 50-52 (7th Cir. 1962). Consequently, this Court was well aware of the distinction between reissue and the Doctrine of Equivalents when it decided Graver Tank. See 339 U.S. at 614-16 (reissue adequately protects patentees without doctrine of equivalents) (Black, J., dissenting).

<sup>20. &</sup>quot;An element in a claim . . . may be expressed as a means or step for performing a specified function" and "such a claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

<sup>21.</sup> Petitioner contends that § 251 of the 1952 Act provides for "the very (Cont'd)

Since Congress has not acted, it must be assumed that the rule of Graver Tank and its predecessors is consistent with the 1952 Act. Johnson, 480 U.S. at 629 n.7. Since Congress has not interfered, this Court should abstain as well.

Petitioner argues that the Doctrine of Equivalents expands the scope of a patent to include protection outside the patent claim — an interpretation soundly rejected by this Court. In *Graver Tank*, this issue was clearly in the Court's mind, but did not preclude application of the Doctrine of Equivalents. *Graver Tank*, 339 U.S. at 615 n. 3 ("the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office" (Black, J., dissenting)). The Federal Circuit is of a like view:

To say that the doctrine of equivalents extends or enlarges the claims is a contradiction in terms. The claims — i.e., the scope of patent protection as defined by the claims — remain the same and application of the doctrine [of equivalents] expands the right to exclude to "equivalents" of what is claimed.

Wilson Sporting Goods v. David Geoffrey & Assoc., 904 F.2d 677, 684 (Fed. Cir. 1990) (Rich, J.), cert. denied, 498 U.S. 992 (1990).

The patent grant has always been interpreted as extending to substantial equivalents ab initio. See, e.g., Union Paper Bag Machine Co. v. Murphy, 97 U.S. 120, 125 (1878) ("[a]uthorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself"); accord Sanitary Refrigerator, 280 U.S. at 42. The initial patent grant includes all inventions literally defined by the patent claims, as well as those

having only insubstantial differences from the literally claimed invention — in the eyes of the law, these are the same thing. See Winans, 56 U.S. at 343 ("patentee... deemed to claim every form in which his invention may be copied.") This Court has made clear that the law interprets a claim to cover equivalents without the need for the patentee to expressly state that equivalents were being claimed. Id.<sup>22</sup>

Petitioner would have patents construed narrowly — limited to their literal terms. That has never been the goal of our patent system:

Patents for inventions are not to be treated as mere monopolies and, therefore, odious in the eyes of the law; but they are to receive a liberal construction, and under the fair application of the rule, ut res magis valeat quam pereat [that the thing may rather have effect than be destroyed,] are if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor.

Turrill v. Michigan Southern & Northern Indiana Ry. Co., 68 U.S. 491, 510 (1864). The courts have always strived to "construe... patents fairly and liberally, and not to subject them to any overnice and critical refinements." Ames v. Howard, 1 F. Cas. 755, 756 (C.C.D. Mass. 1833) (No. 326) (Justice Story); see also Winans, 56 U.S. at 341:

An inventor is always entitled to equivalents — that is to say, to devices which operate in substantially the same way to accomplish substantially the same result in a combination. Exparte Cook, 1890 C.D. 81, 82.

<sup>22.</sup> Even the Patent Office has always considered patent claims to include equivalents:

[S]pecifications are to be construed liberally, in accordance with the design of the Constitution and the patent laws of the United States, to promote the progress of the useful arts, and allow inventors to retain to their own use, not any thing which is matter of common right, but what they themselves have created.

Petitioner contends that the Doctrine of Equivalents promotes uncertainty and is inconsistent with the requirement of precise claiming required by the patent statutes. This Court in Graver Tank reached its decision over a dissent which raised that same argument. See Graver Tank, 339 U.S. at 613-14 (Black, J., dissenting). Further, as Petitioner concedes, the claiming requirement was contained in the Patent Acts of 1836 and 1870, long before Graver Tank and the 1952 Act. 5 Stat. 117, 119; 16 Stat. 198, 201. In its decision below, the Federal Circuit carefully analyzed this argument, concluding "[t]he Supreme Court explained that the doctrine is not inconsistent with the requirement for explicit claims." Hilton Davis, 62 F.3d at 1526.

The Doctrine of Equivalents is not, as Petitioner suggests, a different kind of infringement. There is only one cause of action under 35 U.S.C. § 271: for infringement. There has never been a decisional or statutory distinction between the legal effect of literal infringement and infringement under the Doctrine of Equivalents. The Doctrine of Equivalents is not a separate cause of action; "Patentees . . . are entitled in all cases to invoke to some extent the doctrine of equivalents." Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 556 (1870). Since the claims are deemed to cover equivalents ab initio, there can be no separation of the cause of action for infringement.

Petitioner argues that the Doctrine should be applied only in cases where the infringer acts in subjective bad faith. This Court in Graver Tank reached its decision over a dissent which raised

that same argument. See Graver Tank, 339 U.S. at 612-13 (Black, J., dissenting). Infringement, whether literal or under the Doctrine of Equivalents, has never depended upon the subjective intent of the infringer or any other "equitable" factors. See, e.g., Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 478 (1974) ("[t]his protection goes not only to copying the subject matter, ... but also forbids independent creation"). "Equity" applied to the Doctrine of Equivalents means only "general fairness." Things Remembered, Inc. v. Petrarca, 1995 U.S. LEXIS 8531 at 17 (1995) (citing Hilton Davis) (Ginsburg, J. concurring). Nor is Petitioner's analogy to "breathing space" in libel actions valid; there is a constitutional right to free speech; there is no such right to infringe a patent, knowingly or otherwise.

# IV. THE DECISION OF THE FEDERAL CIRCUIT ACCURATELY RESTATES GRAVER TANK.

The Federal Circuit has not strayed from the mandate of this Court's decision in Graver Tank, but merely took the "opportunity to restate — not revise — the test for infringement under the doctrine of equivalents." Hilton Davis, 62 F.3d at 1516. Contrary to Petitioner's argument, the Federal Circuit was not left "to its own devices." Pet. Br. at 19. The Court did what it promised — faithfully restating in clear and practical language, the fundamental Graver Tank principle — fulfilling the role Congress envisioned for that court. Petitioner's assertion that the Court felt "constrained" to follow Graver Tank and "not free to rethink the doctrine" assumes there is something to "rethink." Since there is nothing "broken" about the Doctrine of Equivalents or Graver Tank, the Federal Circuit properly found nothing to "fix." Notably, none of the experienced trial or appellate jurists below expressed a longing for a world without this Doctrine.

In Graver Tank this Court held that infringement may be found if the accused device "performs substantially the same function in substantially the same way to obtain the same result"

as the patented invention. Graver Tank, 339 U.S. at 608 (quoting Sanitary Refrigerator Co., 280 U.S. at 42). This neat, memorable phrase is merely one way of applying the Doctrine of Equivalents. "Equivalence, in the patent law, is not the prisoner of a formula, and is not an absolute to be considered in a vacuum." Id. at 609. It must be "determined against the context of the patent, the prior art, and the particular circumstances of the case." Id. When looking at the "particular circumstances of the case", this Court cited several factors which must be considered, including "whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient", whether there is evidence of copying, and whether the accused item was developed by independent research. Id. at 609, 612. "[U]nder the circumstances of this case . . . is a change of such substance as to make the doctrine of equivalents inapplicable; or conversely, whether under the circumstances the change was so insubstantial that the . . . invocation of the doctrine of equivalents was justified." Id. at 610 (emphasis added). Thus, this Court made clear that it is the substantiality of the change which determines whether or not two devices are "equivalent."23 The "final determination requires a balancing of credibility, persuasiveness and weight of the evidence." Id. at 609-10.

Faithfully following this precedent, the Federal Circuit held that "... the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes." Hilton Davis, 62 F.3d at 1518. In determining the "substantiality of the differences," the Federal Circuit restated the law of Graver Tank that the trier of fact may

use the function/way/result test, as well as look to all of the circumstances of the case, such as the known interchangeability of an element, the lack of independent research and development, and the evidence of copying. *Id.* at 1518-20.

Nor is the Doctrine "an equity-based form of relief" — it is clearly a jury question. See, e.g., Graver Tank, 339 U.S. at 609 ("finding of equivalence is a determination of fact."); Royer v. Schultz Belting Co., 135 U.S. 319 (1890); Tyler v. Boston, 74 U.S. (7 Wall.) 327 (1868); Winans, 56 U.S. at 338. The present case is thus distinguishable from situations where only questions of law are presented. Cf., Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), cert. granted, 116 S. Ct. 40 (1995).24

Finally, Petitioner argues that it is unfair to "punish" infringers based on a jury's determination of what meets the "nebulous" standard of "insubstantial differences." Graver Tank forecloses that argument. Nor is the "insubstantial difference" standard any more difficult for a jury to deal with than other factual intellectual property concepts such as "substantial similarity" in copyright or "likelihood of confusion" in trademarks. See, e.g., Ford Motor Co. v. Summit Motor Products, Inc., 930 F.2d 277 (3d Cir. 1991), cert. denied, 112 S. Ct. 373 (1991) (copyright); Two Pesos, Inc. v. Taco Cabana, Inc., 505 U.S. 763 (1992) (trademark).

<sup>23.</sup> The adoption by Graver Tank and the Federal Circuit of a factual three part test (function/way/result) with consideration of other objective evidence of equivalence (interchangeability, copying, designing around) is the direct analog of another well-known patent law principle using a three part factual inquiry and consideration of objective evidence of nonobviousness to determine validity. Graham v. John Deere Co., 383 U.S. 1, 17 (1966).

<sup>24.</sup> Markman involves the question of whether the legal issue of claim interpretation should be removed from the jury. Claim interpretation has always been for the court; infringement (whether literal or by equivalents) for the jury. In the present case, there is no issue of impingement on a party's Seventh Amendment jury rights. See 62 F.3d at 1522.

#### CONCLUSION

For the foregoing reasons, the petition for writ of certiorari should be denied.

Respectfully submitted,

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# Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co., Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### REPLY BRIEF FOR PETITIONER

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## TABLE OF AUTHORITIES

Cases	Page
Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574 (2d Cir. 1929), cert. denied, 281 U.S. 741 (1930)	E
Graver Tank & Mfg. Co. v. Linde Air Prods. Co.,	ıssin
Hughes Aircraft Co. v. United States, 717 F.2d 1351 (Fed. Cir. 1983)	5
Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422 (Fed. Cir. 1989)	4
London v. Carson Pirie Scott & Co., 946 F.2d 1534 (Fed. Cir. 1991)	4
Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991)	4
Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931 (Fed. Cir. 1987), cert. denied, 485 U.S. 961, 1009 (1988)	5
Perkin-Elmer Corp. v. Westinghouse Electric Corp., 822 F.2d 1528 (Fed. Cir. 1987)	4
Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558 (Fed. Cir. 1986)	4, 1
Virginia Bankshares, Inc. v. Sandberg, 501 U.S. 1083 (1991)	
Yee v. City of Escondido, 112 S. Ct. 1522 (1992)	:
Statutes	
35 U.S.C. § 112	
35 U.S.C. § 154	1
35 U.S.C. § 251	
Other Materials	
Adelman & Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not	
Answer, 137 U. Pa. L. Rev. 673 (1989)	
	2, 3,
Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv.	
J. L. & Tech. 281 (1994)	3,
Hantman, Doctrine of Equivalents, 70 J. Pat. & Trademark Off. Soc'y 511 (1988)	

TABLE OF AUTHORITIES—Continued	
	Page
Larson, Balancing the Competing Policies Underly-	
ing the Doctrine of Equivalents in Patent Law,	
29 AIPLA Q.J. 1 (1992)	9
Moorhead, The Doctrine of Equivalents: Rarely	
Actionable Non-Literal Infringement or the	
Second Prong of Patent Infringement Charges?,	
53 Ohio St. L.J. 1421 (1992)	4
Smith, The Federal Circuit's Modern Doctrine of	
Equivalents in Patent Infringement, 29 Santa	
Clara L. Rev. 901 (1989)	4

# Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC., Petitioner,

HILTON DAVIS CHEMICAL Co., Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### REPLY BRIEF FOR PETITIONER

Nothing in respondent's brief in opposition weakens the compelling reasons for granting the petition in this case. First, the question presented is of "fundamental importance . . . in virtually all patent litigation" (Amer. Int. Prop. L. Ass'n Br. 8), as infringement under the doctrine of equivalents is now asserted as a routine second cause of action (beyond literal infringement) in most patent infringement actions. See Pet. 16. This Court, however, has not addressed this basic question of patent law since Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), decided before the current patent statute was enacted. And the issue, like the related (but different) issue presented in Markman v. Westview Instruments, Inc., No. 95-26 (oral argument scheduled for Jan. 8, 1996), goes to the heart of the patent system's commitment to requiring precisely defined and known

boundaries to the legal monopolies from which patentees may exclude the world for 17 or more years. See 35 U.S.C. § 154.<sup>1</sup>

Second, this is not one of the ordinary cases where the Federal Circuit's "special expertise" entitles it to "special deference" in its independent resolution of routine patentlaw issues. Br. in Opp. 19, 18. Not only is the issue very far from routine, but the Federal Circuit plainly did not feel free to apply its expertise to give thorough consideration to all aspects of the issue. Rather, over vigorous dissents pointing out the deep problems of uncertainty generated by a broad doctrine of equivalents, the majority of the Federal Circuit, far from denying these problems, simply concluded that it was compelled to reach its holding by its understanding of this Court's decision in Graver. See Pet. 19-21. This Court should accept what amounts to an invitation from the Federal Circuit to review the doctrine, particularly because the decision in Graver does not bear the weight assigned to it by the court below. i.e., does not properly compel the broad doctrine of equivalents under the 1952 Patent Act. See, e.g., Pet. 26-27; D. Chisum, Patents § 18.02[2], at 18-14 to 18-15 (1995).<sup>2</sup>

Third, given the long-recognized doubts about the meaning of Graver for this fundamental question of patent law, the doctrine of equivalents has been anything but "uncontroversial" (Br. in Opp. 9, 15), and respondent is wrong in asserting that a broad doctrine like the majority's below has been applied "without apparent concern" (id. at 12) and "consistently" (id. at 19) by the lower courts. Rather, as proved by the very need of the Federal Circuit to grant en banc review of the doctrine for the second time in a decade (see Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934-35 (Fed. Cir. 1987), cert. denied, 485 U.S. 961, 1009 (1988)). there has long been "considerable debate and uncertainty" about the doctrine.4 Though "once thought to be a narrow doctrine," 4 it has been the subject of expansion, contraction, refinement, interpretation, and questioning since the Federal Circuit was created. See Pet. 16-17 & n.16.3

single claim that the doctrine of equivalents provides no valid ground for imposing infringement liability on petitioner in favor of respondent. See Yee v. City of Escondido, 112 S. Ct. 1522, 1532 (1992) (any argument in support of claim is available). And the Court may consider an issue that "the court below passed on," particularly if the issue is "in a state of evolving definition and uncertainty" and "one of importance to the administration of federal law." Virginia Bankshares, Inc. v. Sandberg, 501 U.S. 1083, 1099 n.8 (1991) (internal quotation marks omitted).

We note, too, that although respondent tries to portray the facts otherwise (e.g., Br. in Opp. 5, 7, 17), the jury rejected the claim of willful infringement, and the Federal Circuit repeatedly pointed to the evidence of petitioner's independent development of its process. See Pet. App. 5a, 18a-21a, 167a, 168a.

¹ The outcome in Markman is not controlling here, for whoever (judge or jury) decides issues of claim interpretation, the question remains whether, as the Federal Circuit majority concluded, infringement protection extends a patent monopoly beyond the claims (as interpreted) to some area found by a jury to be "substantially" equivalent. But the cases are obviously related, because this case involves the second step (after interpretation of the claim itself) in determining the legally protected scope of each patent monopoly. And the patent system's policy of clear notice of distinct boundaries can, of course, be defeated at either step. This case thus is a natural companion to Markman. See also Pet. App. 123a n.21 (Nies, J., dissenting).

<sup>&</sup>lt;sup>2</sup> Contrary to respondent's suggestion (Br. in Opp. 19), the argument that *Graver* is not controlling today (expressly passed on by the Federal Circuit, e.g., Pet. App. 27a-28a) is properly before this Court. The Court may consider any argument in support of the

<sup>&</sup>lt;sup>3</sup> Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv. J. L. & Tech. 281, 301 (1994).

<sup>&</sup>lt;sup>4</sup> Adelman & Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 699 (1989).

<sup>&</sup>lt;sup>5</sup> See, e.g., D. Chisum, Patents § 18.04, at 18-73 to 18-150 (1995); Hughes Aircraft Co. v. United States, 717 F.2d 1351 (Fed. Cir.

Naturally, the judiciary's (and litigants') struggles with this "fuzzy" doctrine grew ever more urgent as the number of cases invoking the doctrine, and number of jury trials, increased dramatically. Far from being comfortably well-established, any broadly available infringement liability under the doctrine of equivalents has long provoked deep divisions, as reflected in the 7-5 split among the judges of the Federal Circuit in this case.

Fourth, the Federal Circuit majority's broad doctrine carries with it the very problems described by respondent (Br. in Opp. 10): "weakened conceptual underpinnings, irreconcilable competing legal doctrines or policies, inherent confusion created by an unworkable decision, direct obstacles to important objectives in other laws, or inconsistency with sense of justice or social welfare." Most fundamentally, the core statutory commitment to precise notice of the extent of each patent monopoly—so that businesses and other inventors may know where not to

tread—is deeply inconsistent with the Federal Circuit's broad allowance of jury-determined "substantial" equivalents. See Pet. 22-25. Strikingly, in all of its defense of a broad doctrine, respondent never once quotes the critical statutory directive embodying that commitment through the requirement of precise claiming, 35 U.S.C. § 112 (paragraph 2).

More generally, respondent nowhere shows how to reconcile the Federal Circuit's broad equivalents doctrine with the requirement of distinct claims approved after administrative scrutiny; with the express (and carefully protective) provisions for reissues to permit correction where claims are mistakenly too narrow, 35 U.S.C. §§ 251-52; and with the provision for "equivalence" as part of the patent monopoly in certain limited circumstances, 35 U.S.C. § 112 (paragraph 6).8 Nor does respondent's brief allay

<sup>1983);</sup> Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558 (Fed. Cir. 1986); Perkin-Elmer Corp. v. Westinghouse Electric Corp., 822 F.2d 1528 (Fed. Cir. 1987); Pennwalt, supra; Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422 (Fed. Cir. 1989); London v. Carson Pirie Scott & Co., 946 F.2d 1534 (Fed. Cir. 1991); Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991); Smith, The Federal Circuit's Modern Doctrine of Equivalents in Patent Infringement, 29 Santa Clara L. Rev. 901, 902 (1989) ("The Federal Circuit's views on the doctrine of equivalents are of profound importance not only to patent lawyers, but also to the business community. The Federal Circuit is presently unable to express a coherent view on the doctrine of equivalents.") (footnote omitted).

<sup>&</sup>lt;sup>6</sup> See Moorhead, The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement or the Second Prong of Patent Infringement Charges?, 53 Ohio St. L.J. 1421, 1432 (1992); AIPLA Br. 3; Seagate Br. 2. A Westlaw search shows that district court decisions using the phrase "doctrine of equivalents" increased from 286 in the 30 year period, 1950-1980, to 596 in 1981-present. The figures for the courts of appeals (reflecting a comparable quadrupling of the rate) are 186 for 1950-1980 and 351 for 1981-present.

<sup>&</sup>lt;sup>7</sup> Judge Learned Hand recognized long ago that a broad doctrine "violates in theory the underlying and necessary principle that the disclosure is open to the public save as the claim forbids, and that it is the claim and that alone which measures the monopoly." Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574, 575 (2d Cir. 1929), cert. denied, 281 U.S. 741 (1930), See also D. Chisum, supra, § 18.04[1][a][i], at 18-74 to 18-90; Texas Instruments, 805 F.2d at 1572 ("The determination of equivalency by its nature is inimical to the basic precept of patent law that the claims are the measure of the grant."). Not surprisingly, then, virtually all of the decisions from this Court cited by respondents (Br. in Opp. 9 & n.10) long pre-date Graver and come from the era of "central" claiming. See Hantman, Doctrine of Equivalents, 70 J. Pat. & Trademark Off. Soc'y 511, 533 (1988) (in the decades before Graver, doctrine of equivalents was rarely if ever applied to expand protection beyond claim terms).

<sup>&</sup>lt;sup>8</sup> Respondent revealingly acknowledges that the Federal Circuit's doctrine of equivalents treats patent law as if it were analogous to copyright law (Br. in Opp. 29), but there are at least two decisive differences: first, a patent claim must be given a government-approved precise definition at its inception, whereas a copyright is self-created and not precisely defined upon creation; second, under the Federal Circuit's and respondent's view (id. at 26-27), infringement of a patent requires no proof of intentional copying, whereas copyright infringement does. See Pet. 22

the central, real-world concern about the gross uncertainty engendered by a doctrine making infringement liability turn on whether a particular jury determines whether differences between two products or processes are "substantial"—an uncertainty magnified by the now-pervasive role of juries in patent-infringement actions. See Glitzenstein, supra, at 307 ("The Federal Circuit . . . can offer no guidance for determining if the equivalence between two elements is substantial.") (footnote citing Malta, 952 F.2d at 1326). Judge Newman, one of the judges who concurred in the majority opinion, expressly recognized this: "the court's decision today provides no more certainty than did the 1950 decision in Graver Tank, leaving in place the problems of application of the doctrine that have concerned this court." Pet. App. 45a.

Respondent makes an extended policy argument on the merits, to the effect that a broad doctrine of equivalents is needed to spur innovation. Br. in Opp. 14-17. But, as an initial matter, the inquiry is misfocused: the proper question is what policy is consistent with Congress's decisions in the 1952 Act, including its insistence on precise claiming that would give distinct notice of the extent of the legal monopoly, its tying of infringement to the patent claims, and its specific provisions for corrections

by reissue and for certain "equivalents" claims. See Pet. 21-27. And, in any event, respondent itself recognizes that innovation vitally depends on inventors' ability to "design around" existing patents, and hence on precisely known boundaries of existing patents. Br. in Opp. 17. It is a mystery how respondent can expect this Court to accept its judgment that the uncertainty inherent in the Federal Circuit's broad doctrine of equivalents—under which juries will decide when "the differences between the claimed and accused products or processes are insubstantial" (Pet. App. 7a)—will better serve to encourage innovation than an infringement standard that enables inventors to place reliance on the publicly available terms of the precise patent claims approved by the Patent and Trademark Office. See Seagate Br. 3-4; note 9, supra.

In sum, whether *Graver* requires reconsideration or merely an appropriately limited reading to reflect the policies of the 1952 Act (see Pet. 27-30), the Federal Circuit's decision adopting a broad doctrine of equivalents, with its pervasive effects on the patent system and thus on innovation, should not be allowed to stand without this Court's review.

#### CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

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December 19, 1995

n.22. Whereas in copyright law it is inevitable (for the first reason) and fair (for the second) for infringement litigation to be the primary means for defining the precise scope of protected rights, in patent law it is neither inevitable nor fair.

Darson, Balancing the Competing Policies Underlying the Doctrine of Equivalents in Patent Law, 21 AIPLA Q.J. 1,10-11 (1992) ("In the experience of the author, if an infringement issue requires consideration of the doctrine of equivalents, practicing lawyers find it extremely difficult, if not impossible, to predict whether a particular product will be found infringing by a court. The Federal Circuit has acknowledged that one who attempts to design around a patent rarely knows whether he is infringing until a district court has decided the issue. Since a violation of patent rights carries serious consequences, the existing state of the law creates uncertainty for manufacturers who compete in product lines protected by patents.") (footnotes omitted).

Supreme Court, U.S. FILED

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# Supreme Court of the United States int CLENK

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

-vs.-

HILTON DAVIS CHEMICAL CO...

Respondent.

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

#### BRIEF OF AMICUS CURIAE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF CERTIORARI

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# TABLE OF CONTENTS

	PAGE
Table of Contents	i
Table of Authorities	ii
Statement of Interest	1
Summary of Argument	2
Argument	2
I. CERTIORARI SHOULD BE GRANTED HER TO CLEARLY DEFINE THE TRIAL COURT' AND JURY'S FUNCTION ON PATENT INFRINGEMENT ISSUES	S
II. THERE IS A NEED FOR CLARIFICATION AND UNIFORMITY AS TO THE ELEMENTS FOR ESTABLISHING INFRINGEMENT UND THE DOCTRINE OF EQUIVALENTS	DER
CONCLUSION	8

#### TABLE OF AUTHORITIES

Cases	PAGE
American Airlines v. Lockwood, 50 F.3d 966 (Fed. Cir. 1995)	3, 4, 5
Blonder-Tongue Lab. v. University of Illinois Found., 402 U.S. 313 (1971)	
Christianson v. Colt Ind. Oper. Corp., 486 U.S. 800 (1988)	. 3
Ommodities Export Co. v. U.S. Customs Service, 957 F.2d 223 (6th Cir. 1992), cert. denied, U.S, 113 S. Ct. 96 (1992)	. 3
Graver Tank & Mfg. Co. v. Linde Air Products, 339 U.S. 606 (1950)	6, 7, 8
Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512 (Fed. Cir. 1995)	
Markman v. Westview Instruments Inc., 52 F.3d 967 (Fed Cir. 1995), cert. granted, Sept. 8, 1995, No. 95-26	. 4, 5
Authorities	
Adelman & Francoine, The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673 (1989)	. 6

#### IN THE

# Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

-vs.-

HILTON DAVIS CHEMICAL CO.,

Respondent.

ON PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

### BRIEF OF AMICUS CURIAE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF CERTIORARI

#### STATEMENT OF INTEREST

The American Intellectual Property Law Association ("AIPLA") is a national association of more than 8,000 members, primarily attorneys, whose interests and practices lie in the areas of patent, copyright, trademark, trade secret, and other intellectual property law. AIPLA attorneys are employed by private law firms, corporations, universities, and governments, and they represent both patent owners and competitors of patent owners.

The AIPLA has no interest in either of the parties to this litigation or in the outcome of this case, other than its interest in seeking correct and consistent interpretation of the law and litigation procedures relating to patents. The AIPLA has obtained the consent of both petitioner Warner-Jenkinson and respondent Hilton Davis to file this amicus brief.

#### SUMMARY OF ARGUMENT

The AIPLA submits this amicus brief to express its views on the importance of granting certiorari in this case. Litigants in patent infringement cases need a precise understanding of the jury's role, as well as clear guidelines on the question of infringement under the doctrine of equivalents. The Federal Circuit's decision and order in this case will seriously impact all future patent infringement litigants, and it will affect the orderly administration of the federal district courts themselves. As set forth below, there is a need for this Court's guidance on the important issues presented.

#### ARGUMENT

I. CERTIORARI SHOULD BE GRANTED HERE TO CLEARLY DEFINE THE TRIAL COURT'S AND JURY'S FUNCTION ON PATENT IN-FRINGEMENT ISSUES

Jury trials, which at one time were virtually unknown in patent cases, have recently become the norm. As former Chief Judge Nies of the Court of Appeals for the Federal Circuit recently observed:

In Blonder-Tongue Lab. v. University of Illinois Found, 402 U.S. 313, 336 n.30 (1971), the Supreme Court noted that in the three year period spanning 1968-1970, only 13 of 382 patent cases going to trial were jury trials.

More than half such suits, however, are now tried to juries.

In the fiscal years 1992-1994, 163 of 274 patent trials were tried to a jury. In fiscal year 1994, 70% of patent trials were tried to juries.

American Airlines v. Lockwood, 50 F.3d 966, 980-81 and n.1 (Fed. Cir. 1995) (Nies, J., dissenting from the Federal Circuit's refusal to rehear en banc) (citations omitted).

There appear to be several reasons why juries have become the preferred choice for patent trials. First, given the heavy dockets our federal district courts face, a jury verdict usually is rendered more quickly after trial than a judge's decision. Second, a jury verdict is more difficult to overturn on appeal. Third, there is a widely held perception that juries have shown a propensity to find for the patentee.

The increased use of juries in patent infringement litigations has led to serious questions concerning their role, as well as to disagreement over which issues juries may be allowed to decide. There is now only one appellate court (the Federal Circuit) that hears patent cases, a procedure that was adopted in the search for uniformity in the patent laws. See Christianson v. Colt Ind. Oper. Corp., 486 U.S. 800, 820 (1988) (Stevens, J., concurring); Commodities Export Co. v. U.S. Customs Service, 957 F. 2d 223, 227 (6th Cir. 1992), cert denied, \_\_\_ U.S. \_\_\_, 113 S.Ct. 96 (1992). However, that court is irreconcilably divided on fundamental questions governing the role of juries. See Lockwood, 50 F.3d 966. As noted in Lockwood, by the former Chief Judge of that court, the divergent views expressed in the several opinions issued on the role of juries "creates the type of conflict with other circuits that warrants Supreme Court review." Lockwood, 50 F.3d at 987 (Nies, J., dissenting from the Federal Circuit's refusal to rehear en banc).

The conflict concerning the function of juries in patent cases is evident from the Federal Circuit's recent attempts to bring order through the use of en banc review—attempts that instead have produced splintered decisions with numerous and conflicting opinions. The Federal Circuit has addressed the jury's role in three noteworthy decisions this year alone, each one of which sharply divided that court.

Markman v. Westview Instruments Inc., 52 F.3d 967 (Fed. Cir. 1995 (en banc)), cert. granted, Sept. 8, 1995, No. 95-26, which held that claim construction is a question of law exclusively for the court (even when it involves resolving evidentiary disputes such as the meaning of technical terms) generated four opinions—the majority, which 8 of the judges joined, two concurrences and one dissent.

In Lockwood, the court held that a complaint seeking only declaratory relief against a patentee was nevertheless triable to a jury as a matter of constitutional right if the patentee demanded it. While the three member panel that heard Lockwood reached a unanimous decision, three judges, including the current and former chief judges, wrote strong dissents to the refusal to rehear the case en banc.

Moreover, the present case produced 5 separate opinions, with only 7 of the 12 judges joining in the majority opinion.

The unsettled state of the law governing the role of juries in patent cases is evident from the fact that, in the only Court of Appeals with jurisdiction in those cases, twelve judges have all cited the same precedents from this Court, yet reached divergent conclusions.

This Court already has recognized the need for its intervention on two of the important issues relating to the role of the jury in patent cases. Certiorari was granted in Lockwood to review the question of whether a demand for purely declaratory relief is, at the patentee's insistence, triable to a

jury. More recently, this Court decided to hear, and now has under review, the Markman case.

The AIPLA submits that the present case also merits this Court's review and should be considered together with Markman. Like Markman, Hilton Davis<sup>2</sup> arises from an unsuccessful en banc attempt to reach uniformity at the Federal Circuit. Like Markman, the issues to be addressed concern claim interpretation and infringement—issues that arise in almost every patent jury trial.

Moreover, there appears to be an inherent tension between the Federal Circuit's majority opinions in Markman and Hilton Davis. The Markman majority held that the scope and meaning of the patent claims—a fundamental prerequisite for proper infringement analysis-is a matter of law to be decided exclusively by the judge. On the other hand, the majority in the present case concluded that the question of equivalence-which determines the extent (if any) by which the enforceable scope of the patent claims exceeds their literal scope—is an issue for the jury to resolve. The Former Chief Judge observed that Hilton Davis presented the "complementary question" to that of Markman-i.e., "whether determination of the scope of the claim likewise is a question of law." Hilton Davis, 62 F.3d at 1569 n.19 (Nies, J., dissenting). Yet, as is evident, the Federal Circuit majority reached different conclusions on these closely related issues.

That review, unfortunately, was foreclosed by the patentee's subsequent withdrawal of its jury demand. This Court accordingly vacated the judgment and remanded the case. American Airlines, Inc. v. Lockwood, \_\_\_\_ U.S. \_\_\_\_, 116 S.Ct. 29 (1995).

Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512 (Fed. Cir. 1995).

# II. THERE IS NEED FOR CLARIFICATION AND UNIFORMITY AS TO THE ELEMENTS FOR ESTABLISHING INFRINGEMENT UNDER THE DOCTRINE OF EQUIVALENTS

Hilton Davis involves the doctrine of equivalents, a doctrine developed in the nineteenth century and crystallized in this Court's opinion in Graver Tank & Mfg. Co. v. Linde Air Products, 339 U.S. 606 (1950). The doctrine of equivalents assures that patent infringement is determined by substantive merit rather than formalistic literalism.3 The doctrine is and has been one of the most important, and controversial, principles applied in patent litigation. As recently as 1989, the doctrine was labelled "the primary (although not the exclusive) cause of the current uncertainty surrounding the scope of patent claims"-an uncertainty that "hinders both patent holders and potential defendants from assessing the outcome of litigation or from making other business decisions, such as the direction that research and development efforts should take." Adelman & Francione, The Doctrine of Equivalents in Patent Law: Questions That Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 682-83 (1989) (footnotes omitted).

En banc review did not result in a clear consensus. The Federal Circuit issued 5 separate opinions. Seven of the twelve judges subscribed to the majority opinion; one of those seven judges also authored an opinion concurring in the result; and five judges dissented, in three separate opinions. That fragmentation demonstrates fundamentally divergent views.

The issues on which litigants need guidance, and on which the Federal Circuit is irreconcilably divided, are:

- (1) Is the doctrine one of equitable application and therefore to be resolved solely by the judge? (The majority of the Federal Circuit held that it is not.)
- (2) Does the doctrine require as a predicate a finding that the accused infringer sought to evade the ambit of the patent? (The majority of the Federal Circuit held that it does not.)
- (3) Is the tripartite test of substantial identity of means, way, and result that was formulated in Graver Tank the sole determinant of infringement by equivalence? (The Federal Circuit majority held that it is not and that a broader test based on the "substantiality of the differences" should be applied.)

The first dissenting opinion, Judge Plager criticized the majority for pronouncing a new standard, one which differs from the Graver Tank analysis, stating that the majority's new test "may come as a revelation to many in the bar." Hilton Davis, 62 F.3d at 1537 (Plager, J., dissenting, joined by Chief Judge Archer and Judges Lourie and Rich). Similarly, the concurring opinion noted that "any change in the legal and factual fundamentals as explicitly laid out by the Supreme Court is beyond our judicial authority." Hilton Davis, 62 F.3d at 1529 (Newman, J., concurring). On the other hand, while Judge Lourie agreed with the majority view that "function, way and result" are not the entire test and that substantiality of the differences is paramount, he dissented (in an opinion joined by Judges Rich and Plager) on the ground that good faith or bad faith are relevant in deciding whether the doctrine applies. These judges would have held that equivalence is an equitable issue which should be decided by the judge, not the jury. Hilton Davis, 62 F.3d at 1550.

For nearly two hundred years courts have applied the doctrine of equivalents when literal infringement cannot be proven in order "to protect the substance of the patentee's right to exclude." Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512, 1516 (Fed. Cir. 1995). See also Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607-08 (1950).

The third dissent partly endorses the views of the first dissent on the question of equivalence, but concludes that the court in this case should have directed a verdict of no infringement. Hilton Davis, 62 F.3d at 1550 (Nies, J., dissenting, joined in part by Chief Judge Archer.) These dissenters concluded that the doctrine of equivalents presents mixed questions of fact and law and that the judge should decide, and instruct the jury, what the scope of the claims is, whether equivalence is circumscribed by factors such as estoppel, and what fact issues are left for the jury to decide. Id. at 1556-58.

Given the fundamental importance of the doctrine of equivalents in virtually all patent litigation, the unfortunate lack of uniformity in the Federal Circuit's analyses of that doctrine, and the need for consistency in determining the respective roles of the judge and jury, the AIPLA believes that there is an urgent need for this Court to clarify the law. We, therefore, strongly urge this Court to grant certiorari and to resolve these important issues.

#### CONCLUSION

The judiciary, the bar, and participants in the competitive marketplace are in need of the "clear and reviewable boundaries" that only this Court can issue. Indeed, two members of the Federal Circuit appear to be calling upon this Court to do just that. Judge Nies noted that this Court has not addressed the conflicting interests of the doctrine of equivalents under the current statute and Patent Office procedures, both of which have changed significantly since Graver Tank. Hilton Davis, 62 F.2d at 1563 (Nies, J., dissenting). See also Hilton Davis, 62 F.2d at 1529 (Newman J., concurring) ("any change in the legal and factual fundamentals so explicitly laid out by the Supreme Court is beyond our judicial authority").

For all the foregoing reasons, the AIPLA respectfully submits that the Federal Circuit's decision and order in this case are of substantial importance to the public generally and particularly to patent owners and their competitors, as well as to the efficient administration of justice by our Federal district courts. Accordingly, the AIPLA respectfully urges this Court to grant the petition for certiorari.

Respectfully submitted,

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# In the Supreme Court

OF THE

## **United States**

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC. Petitioner,

٧.

HILTON DAVIS CHEMICAL Co., Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

# BRIEF OF AMICUS CURIAE SEAGATE TECHNOLOGY, INC. IN SUPPORT OF PETITION FOR WRIT OF CERTIORARI, IN WHICH THE FOLLOWING CORPORATIONS JOIN:

Amdahl Corporation
Cirrus Logic, Inc.
Coherent, Inc.
Conner Peripherals Inc.
Eastman Medical Products, Inc.
Giro Sport Design, Inc.

Intel Corporation
Read-Rite Corporation
Scitex Digital Video Inc.
Storage Technology Corporation
Western Digital Corporation

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Storage Technology Corporation
Western Digital Corporation

#### STATEMENT OF AMICI

The parties listed above as amici curiae file this brief in support of the petition for writ of certiorari in the case of Warner-Jenkinson Company, Inc. v. Hilton Davis Chemical

Co.. Written consent to the filing of this brief has been obtained from the petitioner and the respondent and is being filed herewith.

Amici urge the Court to grant certiorari in this case because of the increased uncertainties over the past ten years in the application of the judicial doctrine of equivalents. These increased uncertainties (particularly the role of the jury in the application of this doctrine) have become an unreasonable deterrent to the making of business decisions involving patents.

The purpose of the claims of every patent is to give notice of the metes and bounds of the invention protected by the patent. Zenith Laboratories, Inc. v. Bristol-Myers Squibb Co., 19 F.3d 1418 (Fed. Cir. 1994), cert. denied, 115 S.Ct. 500. However, as detailed in Petitioner's Brief, the law governing the application of the doctrine of equivalents makes the scope of protection afforded by a patent claim extremely uncertain. Brief for Petitioner at 15-21. The United States Court of Appeals for the Federal Circuit in Hilton-Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512 (Fed. Cir. 1995) has heightened this uncertainty by holding that patent infringement under the doctrine of equivalents may be asserted in all patent infringement cases, while providing little clarification as to how that doctrine is to be applied by judges or juries.

Moreover, the role of juries has increased dramatically in recent years. Director of Administrative Office of U.S. Court Annual Reports 1972, 1992 and 1993 (giving percentage of patent trials decided by juries in 1972, 1980, 1992, and 1993 as approximately 10%, 17%, 51% and 50%, respectively). This increased jury participation has been accompanied by the uncertainty of how a jury will decide complex high technology issues and how it will react to emotional evidence which is technically irrelevant to the scientific questions at issue.

The majority of the technologies of Silicon Valley businesses, such as those of amici, are new, dynamically changing, and result in the design and sale of products often having life cycles that are very short. For this reason, businesses wishing to pursue new products must often make decisions regard significant initial investments and bring new products swiftly to market. Notice and understanding of the scope of the claims of relevant patents, including how they might be applied to an accused product under the doctrine of equivalents, is essential information for many of the business decisions that must be made by these amici and other Silicon Valley and United States manufacturers.

For example, manufacturers such as amici are often faced with the dilemma of having to decide whether to make substantial investments in the design, development, production, and marketing of a new product when another party holds a relevant patent which is not literally infringed by the proposed product. However, the uncertainty, created by the doctrine of equivalents, of whether a jury might still find the differences between the new product and the patent claims "insubstantial" may well deter businesses from making such investments and introducing new products into the marketplace.

Furthermore, the cost of patent litigation and the size of patent jury awards has dramatically increased over the last decade. Patent infringement defendants are often exposed to damage awards which may exceed the value of the business involved. For these reasons, it is all the more critical that businesses such as these amici be able to make these crucial decisions with some degree of predictability and comfort. However, given the uncertainty that the doctrine of equivalents creates regarding the scope of patent claims, businesses, innovators, and their counsel cannot rely on the language of patent claims to evaluate whether new products or designs infringe existing patent claims. Faced with the

uncertain scope of patent claims and the uncertain costs and potential damages to which their activities may expose them, persons or businesses wishing to introduce new products will simply be discouraged from doing so, rather than face the risk of the consequence of an adverse jury decision.

For the foregoing reasons, amici urge this Court to grant certiorari in this case so as to relieve businesses and innovators of the burdens imposed upon them by the uncertainties of the doctrine of equivalents as reflected in the *Hilton-Davis* case and its predecessors.

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IN THE

# Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

V.

HILTON DAVIS CHEMICAL CO.,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

SUPPLEMENTAL BRIEF FOR RESPONDENT IN OPPOSITION TO BRIEFS OF AMICI CURIAE

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#### LIST OF PARTIES PURSUANT TO RULES 14.1(B) AND 29.6

The names of all parties in the court whose judgment is sought to be reviewed appear in the caption of this Brief.

Respondent has the following parent and subsidiary companies:

Freedom Chemical Company (parent)
A Chem (UK) Limited (subsidiary)

# ii TABLE OF CONTENTS

LIST	OF PARTIES PURSUANT TO RULES	
	14.1(B) AND 29.6	i
TABL	E OF CONTENTS i	i
TABL	E OF AUTHORITIES ii	i
I.	INTRODUCTION	ı
II.	ARGUMENT	1
	A. The Issue of Infringement Under the Doctrine of Equivalents Is, Like Literal Infringement, an Issue of Fact to be Submitted to the Jury in a Jury Case	1
	B. The Federal Circuit's Unambiguous  En Banc Ruling in Hilton Davis Obviates the Need for Further "Clarification" of the Test for Infringement Under the Doctrine of Equivalents	7
CON	CLUSION	9

# TABLE OF AUTHORITIES

## FEDERAL CASES

Battin v. Taggert	, 5	8	U	J.	S.	. (	(1	5	H	0	W	.)	7	4	(	18	35	4)	)	0	9	6	9		1
Beacon Theaters (1959) .																									6
Chauffeurs, Team Terry, 494	ste	er.	S.	a	na 55	8	Ha (	el <sub>j</sub>	pe 99	0	5 /	L	00	ai	! !	Ve	).	3	9	1	v.	2,	. 4	ŧ,	5
Curtis v. Loether	4	1:	5	U	.5	5.	1	8	9	(1	9	74	4)												5
Royer v. Schultz	Bei	lti	nį	g	C	o.	,	1	35	5	U	.S	5.	3	19	)	(1	8	9(	))					2
Tyler v. Boston,	74	U	1.5	S.	(	7	V	Va	ıll	.)	3	2	7	()	18	6	8)	,	*						2
United States v. E	ic	hr	ne	an	1,	4	90	5	U	.S	S.	3	1(	)	(1	9	90	))		9	9	6	9		8
Winans v. Denme	ad		56	5	U	.5	S.	(	15	,	H	OV	N.	)	33	30	) (	(1	85	53	)				1
Wooddell. v. Intel Workers, S	m2	ati 2 1	io U	no .S	al	B 9	ire	oti (1	he	9	ho 1)	00	d	0	f i	El	lei	cti	rio	ca	ıl		*		5
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35 U.S.C. § 154	6	a	0	9	g	9	9	9	9	9		6	a	0		9			9	9	9	æ	œ.	. (	6
35 U.S.C. § 283	4		9	9	*	9	œ	9				a	9		6	9	0	9	9		a		a	. 1	5
35 U.S.C. § 284	9	•	9	9			9	a			6		0		9		9							. (	5
35 U.S.C. § 285			4																						6

#### OTHER AUTHORITIES

(C.P. 1785)
Bramah v. Hardcastle, 1 Carpmael 168 (K.B. 1789) 3
Morgan v. Seaward, 1 Websters Patent Cases 167 (Ex. 1836)
Russell v. Cowley & Dixon, 1 Websters Patent Cases 459 (Ex. 1834)
21 Jac. 1, C. 3 (1624)

#### I. INTRODUCTION

This brief is submitted in reply to the Briefs of Amicus Curiae American Intellectual Property Law Association and Amicus Curiae Seagate Technology, Inc. 1 It addresses only those new issues raised that were not previously addressed in Respondent's Brief in Opposition.

#### II. ARGUMENT

A. The Issue of Infringement Under the Doctrine of Equivalents is, like Literal Infringement, an Issue of Fact to be Submitted to the Jury in a Jury Case.

The question of the right to a trial by jury of infringement under the Doctrine of Equivalents is so well settled that it should not be revisited by this Court. During the last 150 years, this Court has repeatedly stated that determination of infringement under the Doctrine of Equivalents is a question of fact to be submitted to a jury. See Winans v. Denmead, 56 U.S. (15 How.) 330, 344 (1853) ("[w]hether, in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense above explained [i.e., equivalents], is a question for the jury, and the court erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative."); Battin

Respondent notes that Amicus Seagate Technologies, as well as several of the corporations joining in Seagate's brief, have been or are presently *defendants* in patent infringement litigation, and are, therefore, not totally disinterested.

v. Taggert, 58 U.S. (15 How.) 74, 85 (1854) ("questions of fact . . . such as the identity of the machine used by the defendant with that of the plaintiff's, or whether they have been constructed and act on the same principle," are questions "which come within the province of a jury"); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868) (whether one compound of given proportions is substantially the same as another compound varying in the proportions -- whether they are substantially the same or substantially different -- is a question of fact and for the jury); Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890) ("the circuit court erred in not submitting to the jury the question of infringement, under proper instructions".)

In Chauffeurs, Teamsters and Helpers Local No. 391 v. Terry, 494 U.S. 558, 565 (1990), this Court gave clear instructions regarding the Seventh Amendment right to jury trial:

[t]o determine whether a particular action will resolve legal rights, we examine both the nature of the issues involved and the remedy sought. "First we compare the statutory action to 18th-century actions brought in the courts of England prior to the merger of the courts of law and equity. Second, we examine the remedy sought and determine whether it is legal or equitable in nature." [citations omitted] ... The second inquiry is the more important in our analysis.

Thus, Chauffeurs instructs that in assessing the right to jury trial, a comparison must be made between the action at issue and "18th-century actions brought in the courts of England prior to the merger of law and equity." Id. Patent infringement actions in 18th-century England were commonly brought at law and were tried to a jury. See, e.g., Arkwright v. Nightingale, 1 Websters Patent Cases 60, 64 (C.P. 1785); Bramah v. Hardcastle, 1 Carpmael 168 (K.B. 1789). The English Statute of Monopolies, 21 Jac. 1, C. 3 (1624), provided that patent infringement actions were to be heard at common law ("the force and validity of [letters patents], ought to be and shall be forever hereafter examined, heard, tried, and determined, by and according to the common laws of this realm, and not otherwise").

As part and parcel of the jury determination of patent infringement, the Doctrine of Equivalents developed in England in the law courts, and was tried to juries. In Russell v. Cowley & Dixon, 1 Websters Patent Cases 459, 463 (Ex. 1834), the question of colorable or substantial difference was referred to the jury. In Morgan v. Seaward, 1 Websters Patent Cases 167, 171 (Ex. 1836), the court (Alderson B.), instructed the jury that:

the question would be, simply, whether the defendants' machine was only colourably different; that is, whether it differed merely in the substitution of what are called mechanical equivalents for the contrivances which were resorted to by the patentee . . . therefore the two machines are alike in principle, one man was the first inventor of the principle, and the other has adopted it, and though he may have

carried it into effect by substituting one mechanical equivalent for another, still you [the jury] are to look to the substance and not to the mere form, and if it is in substance an infringement, you ought to find that it is so.

Again the court was referring to the well-known infringement by equivalents.

Thus, the above late eighteenth century English actions for patent infringement clearly show that infringement was tried to a jury as an action at law. Early nineteenth century actions in England applying the doctrine of equivalents also referred the issue to the jury. The right to jury trial in today's patent infringement cases (including those applying the doctrine of equivalents), is thus preserved as a right that was available in the identical action at law for patent infringement in pre-1791 English courts.

#### Chauffeurs also teaches that:

[t]he right to a jury trial includes more than the common-law forms of action recognized in 1791; the phrase "Suits at common-law" refers to "suits in which legal rights [are] to be ascertained and determined in contradistinction to those where equitable rights alone [are] recognized, and equitable remedies [are] administered." [citation omitted] . . . ("[T]he amendment then may well be construed to embrace all suits which are not of equity and admiralty jurisdiction, whatever may be the peculiar form which they may assume to settle legal rights".) The

right extends to causes of action created by Congress." [citation omitted]

Chauffeurs, 494 U.S. at 564-65.

In this country, in 1790 (before passage of the Seventh Amendment in 1791), Congress had provided for patent infringement "damages as shall be assessed by a jury" (Act of April 10, 1790, chapter 7, section 4, 1 Stat. 109). Therefore, before 1791 there was an action created by Congress which was identical to the present action for patent infringement and damages. The Act of 1790 made it clear that jury trial was available as a matter of right in this statutory action. As the Seventh Amendment reference to "suits at common law" has been interpreted to include "causes of action created by Congress" (Chauffeurs, 494 U.S. at 564-65), the Seventh Amendment preserved this right to jury trial in a patent infringement action seeking damages created by the Statute of 1790. That right continues to the present day.

As Chauffeurs instructs, determination of the most analogous or identical action is secondary to the determination of the nature of the relief sought. 494 U.S. at 570. Also, money damages was the traditional form of relief offered in courts of law. Curtis v. Loether, 415 U.S. 189, 196 (1974) In the present case, compensatory relief was requested and obtained by Hilton Davis in the district court.

A plaintiff is entitled to a jury trial when "the damages sought [are] neither analogous to equitable restitutionary relief . . . nor incidental to or intertwined with

injunctive relief" and "the remedy sought [is] legal." Wooddell v. International Brotherhood of Electrical Workers, 502 U.S. 93, 97 (1991). In the present case, the damages sought (and obtained) by Hilton Davis, are not incidental or intertwined with the injunctive relief sought (and obtained). Therefore, as in Wooddell, the remedy that Hilton Davis sought is legal.

Purthermore, of the remedies offered by the present patent statute, 35 U.S.C. §§ 283-285, only compensatory relief, namely damages and a reasonable royalty, is required to be awarded<sup>2</sup>, assuming a finding of liability and evidence of record sufficient to support the damage award. In distinction, the historically equitable remedy of an injunction is discretionary<sup>3</sup>. The compulsory nature of damages/reasonable royalty after a finding of liability suggests that when Congress in 1952 enacted the several forms of relief that could be made available to vindicate the exclusionary rights specified in 35 U.S.C. § 154, it intended to insure the availability, in all cases, of compensatory relief, a form of relief traditionally granted by a jury in a court of law in 18th century England.

The right to jury trial on the claim for monetary relief is not lost by combining it with a claim for injunctive relief. See, Beacon Theaters Inc. v. Westover, 359 U.S. 500 (1959) (holding that the right to a jury trial of a legal claim

involving factual issues such as liability under the Sherman Act and the Clayton Act, cannot be impaired by blending the legal claim with a demand for equitable relief), and Dairy Queen Inc. v. Woods, 369 U.S. 469 (1962) (holding that insofar as a complaint for trademark infringement requests a money judgment it presents a claim which is unquestionably legal and so long as any legal cause is involved in a case, even if the equitable causes clearly outweigh the legal cause, the jury rights created by the legal cause control).

In view of Dairy Queen, Beacon Theaters, Chauffeurs and Wooddell, it is clear that the nature of the remedy sought in the present case is legal. The issue of infringement under the Doctrine of Equivalents, is, like literal infringement, an issue of fact to be submitted to the jury in a jury case, as a matter of right, as the Federal Circuit in the decision below has now held. Hilton Davis, 62 F.3d at 1522. This principle is so well established that it does not require review by this Court.

B. The Federal Circuit's Unambiguous En Banc Ruling in Hilton Davis Obviates the Need for Further "Clarification" of the Test for Infringement Under the Doctrine of Equivalents

The American Intellectual Property Law Association (AIPLA) contends that the Federal Circuit's decision in *Hilton Davis*, considered with the benefit of the wisdom of the full membership of the court, is in need of further clarification. Without citing any supporting authority, the AIPLA contends that "there is an urgent need for this Court

<sup>&</sup>lt;sup>2</sup> "[T]he court shall award the claimant damages . . . " 35 U.S.C. § 284.

<sup>3 &</sup>quot;The several courts . . . may grant injunctions . . . " 35 U.S.C. § 283.

to clarify the law" because there are views espoused in the Hilton Davis dissenting opinions that differ from the majority's holdings. It strains credulity to the breaking point to suggest that this Court should grant certiorari simply because of the mere existence of such differing viewpoints. Unanimity is the exception, rather than the rule, in both this Court and the various Federal Courts of Appeal<sup>4</sup>. Not only does the existence of differing opinions raise no cert-worthy issue, vigorous debate among those having differing views ensures that all important aspects of the issues addressed below were discussed and thoroughly analyzed. In Hilton Davis, a majority of the Federal Circuit unambiguously and clearly stated its position involving the three questions presented addressing the long-standing Doctrine of Equivalents. Accordingly, because the Federal Circuit in Hilton Davis has done nothing more than carry out its Congressionally mandated duty of clarifying and unifying the area of patent law, the granting of certiorari is unwarranted.

#### CONCLUSION

For the foregoing reasons, the writ for certiorari should be denied.

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<sup>&</sup>lt;sup>4</sup> See, e.g., United States v. Eichman, 496 U.S. 310 (1990) (declaring state anti-flag-burning laws unconstitutional in a 5-4 decision).

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OCTOBER TERM, 1995

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On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

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### TABLE OF CONTENTS

	Page
Docket Entries	1
Court of Appeals Order Granting Rehearing En Banc	4
Complaint	6
Patent No. 4,560,746	8
Answer	39
Jury Instructions	41
Jury Verdict	67
Patent File: Excerpts	71
Cover	71
Original Application: Excerpts	73
Examiner's Rejection	78
Notice of Abandonment	84
Continuation in Part (CIP) Application: Excerpts	86
Examiner's Rejection	91
Examiner Interview Summary Record	96
Responsive Amendment	99
Record of Interview	106
Notice of Allowability	109
Excerpts of Testimony	111
Defendant's Exhibit 599	144
Defendant's Exhibit 632	150
Order Granting Petition for Writ of Certiorari	154

# U.S. DISTRICT COURT FOR THE SOUTHERN DISTRICT OF OHIO (CINCINNATI)

Civil Docket for Case #: 91-CV-218

HILTON DAVIS CHEM

V

#### WARNER-JENKINSON

#### DOCKET ENTRIES

Date	No.	PROCEEDINGS
4/1/91	1	Complaint, with Patent attached
4/23/91	2	Answer
***		
4/1/92	21	Warner-Jenkinson's Motion for Summary Judgment of Non-Infringement
•••		
5/11/92	50	First day of trial
***		
5/19/92	59	Fifth day of trial; Warner-Jenkinson's Mo- tion for Summary Judgment of Non-Infringe- ment Denied
***		ment Demod
6/16/92	87	Special Verdict
•••		
6/17/92	89	Motion for Permanent Injunction
6/22/92	90	Judgment

Date	No.	PROCEEDINGS
6/22/92	152	Corrected Judgment
7/1/92	92	Warner-Jenkinson's Motion for Judgment as a Matter of Law
•••		CONTRACTOR CONTRACTOR
10/20/92	150	Order for Permanent Injunction
10/20/92	151	Order Denying Warner-Jenkinson's Motion
•••		for Judgment as a Matter of Law
11/16/92	154	Notice of Appeal
11/17/92	155	Amended Notice of Appeal

## U.S. COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Federal Circuit Docket for Case #: 93-1088
HILTON DAVIS CHEMICAL Co.,
Plaintiff-Appellee

WARNER-JENKINSON COMPANY, INC., Defendant-Appellant

#### DOCKET ENTRIES

Date	No.	PROCEEDINGS
***		
7/9/98	10	Oral Argument Before the Panel
12/3/93	15	Order that Appeal Shall be Decided in banc and Setting Forth Issues to Address
3/9/94		Oral Argument in banc
8/9/95	48	Per Curiam in banc Opinion Affirming as to Issue of Infringement With Separate Con- curring and Dissenting Opinions; Panel Opin- ion Affirming as to Validity

#### UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

#### 93-1088

HILTON DAVIS CHEMICAL Co.,

Plaintiff-Appellee,

V.

WARNER-JENKINSON COMPANY, INC., Defendant-Appellant,

#### ORDER

The appeal, having been heard by a panel of the court and, thereafter, a majority of circuit judges in regular active service having acted sua sponte in accordance with 28 U.S.C. § 46(c) and Fed. R. App. P. 35(a),

IT IS ORDERED that the appeal shall be decided in banc.

IT IS FURTHER ORDERED that the parties shall file supplemental briefs on the following schedule:

The brief for appellant on rehearing in banc shall be filed on or before January 7, 1994. The brief for appellee on rehearing in banc shall be filed on or before February 4, 1994.

The following questions only shall be addressed in the briefs:

(1) Does a finding of patent infringement under the doctrine of equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, and (c) result, the so-called triple identity test of *Graver Tank* v. *Linde Air* 

Products Co., 339 U.S. 605, 85 USPQ 328 (1950), and cases relied on therein? If yes, what?

- (2) Is application of the doctrine of equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of a claim, discretionary in accordance with the circumstances of the case?
- (3) Is the issue of infringement under the doctrine of equivalents an equitable remedy to be decided by the court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case?

Amicus curiae briefs on rehearing in banc may be filed in accordance with Rule 29.

Oral argument will be scheduled after the briefs have been filed.

FOR THE COURT

/s/ Francis X. Gindhart
FRANCIS X. GINDHART
Clerk

12/3/93

cc: J. Robert Chambers, Esq. David E. Schmit, Esq.

[Filed Dec. 3, 1993]

[Filed Apr. 1, 1991]

#### UNITED STATES DISTRICT COURT SOUTHERN DISTRICT OF OHIO WESTERN DIVISION

Civil Action No. ——
HILTON DAVIS CHEMICAL Co.,

VS. Plaintiff,

WARNER-JENKINSON,

Defendant.

#### COMPLAINT FOR PATENT INFRINGEMENT AND JURY DEMAND

Plaintiff, complaining of defendant, alleges as follows through its undersigned attorneys:

#### FIRST CAUSE OF ACTION

- 1. This cause of action is for infringement of a United States patent and arises under the patent laws of the United States, Title 35 of the United States Code. The Court has jurisdiction of this cause of action under said Title 35 and under 28 U.S.C. § 1338. Venue is proper in this district pursuant to 28 U.S.C. §§ 1391(c) and 1400(b).
- 2. Plaintiff is a corporation duly organized and existing under the laws of the State of Delaware and having its principal place of business at 2235 Langdon Farm Road, Cincinnati, Ohio 45237.
- 3. Upon information and belief, Defendant has its place of business at 2526 Baldwin Street, St. Louis, Missouri 63106.
- 4. On December 24, 1985, United States Patent No. 4,560,746 was duly and legally issued for the process of the Ultrafiltration Process for Purification of Dyes Useful in Food Stuffs. Said patent is owned by the Plaintiff.

A copy of United States Patent No. 4,560,746 is attached hereto as Exhibit A.

5. Defendant has willfully infringed United States Patent No. 4,560,746.

WHEREFORE, Plaintiff demands judgment as follows:

- (a) that Defendant, its officers, agents, servants, employees and attorneys and all persons in active concert with them, or any of them, be preliminary and permanently enjoined from infringing United States Patent No. 4,560,746;
- (b) that Plaintiff be awarded damages adequate to compensate for Defendant's infringement, said damages to be trebled because of the willful nature of Defendant's said acts; and
- (c) that Plaintiff have such other and further relief as this Court may deem just and proper, together with reasonable attorneys' fees and the cost and disbursements of this action.

Plaintiff demands a trial by jury.

HILTON DAVIS CHEMICAL CO.

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## United States Patent [19] Rebhahn et al.

[11] Patent Number: 4,560,746

[45] Date of Patent: Dec. 24, 1985

[54] ULTRAFILTRATION PROCESS FOR PURIFI-CATION OF DYES USEFUL IN FOODSTUFFS

[75] Inventors: Robert W. J. Rebhahn, Berkley, Mass.; Wayne L. Cook, Cincinnati, Ohio

[73] Assignee: The Hilton-Davis Chemical Co., Cincinnati, Ohio

[21] Appl. No.: 677,118

[22] Filed: Nov. 30, 1984

#### Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 481,038, Mar. 28, 1983, abandoned.

[58] Field of Search . . . . . 260/208, 144 P; 534/887, 573, 840, 883, 884; 546/174

[56] References Cited

#### U.S. PATENT DOCUMENTS

#### FOREIGN PATENT DOCUMENTS

59782 9/1982 European Pat. Off. 816730 10/1981 South Africa

#### OTHER PUBLICATIONS

Colour Index, 3rd Edition, vol. 4, p. 4087, #15985, (1971).

Osmonics, Inc. Bulletin No. 109, Mar. 1978.

Spatz I, D. Dear., Reverse Osmosis/Ultrafiltration Application to Water Reuse and Material Reclamation, 5-1-75.

Spatz II, D. Dean, Industrial Wastes, Jan.-Feb. 1974, pp. 20-24.

Primary Examiner—Floyd D. Higel

Attorney, Agent, or Firm-William G. Webb; B. Woodrow Wyatt; Paul E. Dupont

#### [57] ABSTRACT

The disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyl) azo]-2-naphthol-6-sulfonic acid (FD and C Red 40), the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid (FD and C Yellow 6), the trisodium salt of 1-[1-(4-sulfonaphthyl)azo]-2-naphthol-3,6-disulfonic acid (FD and C Red 2), the disodium salt of 2-[1-(4-sulfonaphthyl)azol-1-naphthol-4-sulfonic acid (Carmoisine) and the sodium salt of 2-(2-quinolyl)-1,3-indanedione-sulfonic acid (D and C Yellow 10) are prepared and purified in high yield and in a high state of purity by subjecting their aqueous reaction mixtures to ultrafiltration through a membrane of such structure and under such conditions that the impurities are separated from the reaction mixtures, and the products are concentrated in high purity concentrates from which the products can be isolated directly by evaporation of the solvent.

17 Claims, No Drawings

[1]

#### ULTRAFILTRATION PROCESS FOR PURIFICATION OF DYES USEFUL IN FOODSTUFFS

#### RELATED APPLICATION

This is a continuation-in-part of our prior, copending application Ser. No. 481,038, filed Mar. 28, 1983, now abandoned.

### BACKGROUND OF THE INVENTION

#### (a) Field of the Invention

This invention relates to the field of purification, by ultrafiltration techniques, of dyes useful in foodstuffs.

### (b) Information Disclosure Statement

Bollenback et al. U.S. Pat. No. 3,249,444, patented May 3, 1966, describes an ultrafiltration process for increasing the tinctorial power of caramel color in which sugar, i.e. uncaramelized sugar, is separated from caramel color by ultrafiltration through a semi-permeable membrane which permits passage of small, uncolored molecules in solutions containing caramel color and rejects the passage of larger, polymeric caramel color molecules, thus enhancing the color of the concentrate. Preferred membranes for the process are made of vinyl plastics, and preferred pressures are in the range from 20 to 100 p.s.i.g.

Adams et al. U.S. Pat. No. 3,544,455, patented Dec. 1, 1970, discloses a process for the purification of itaconic acid by reverse osmosis through a semi-permeable membrane composed of cellulose acetate or polyamide in which itaconic acid and water are forced to the downstream side of the membrane, while inorganic salts, colored materials and organic materials remain on the upstream side. The process is carried out under a hydrostatic pressure of from

100 to 1,000 p.s.i.g. and at a pH in the range from 2 to 4.

Teed et al. U.S. Pat. No. 4,165,288, patented Aug. 21, 1979, discloses a process for the concentration and partial purification of textile vat dyes for recovery and reuse of the same by subjecting the dye solutions from dyeing operations to reverse osmosis through a semi-permeable membrane, impurities being collected in the permeate and the dye being concentrated in the concentrate. The process is carried out at hydrostatic pressures from 400 to 1,300 p.s.i.g. and at temperatures from 130° F. to 212° F. In order to prevent plugging of the membrance, a turbulent flow of liquid is needed.

EPO Application No. 59,782, published Sept. 15, 1982, discloses a process for concentration, to unspecified levels of purity, of certain anionic dyes, useful in the printing and dyeing of synthetic fibre materials, by passing solutions or suspensions of the dyes through a semi-permeable membrane with a pore diameter of 1-500 Angstroms.

South African Pat. No. 81/6,730, patented Sept. 6, 1982 discloses a process for the preparation of concentrated solutions of anionic dyes, of unspecified purity and useful in printing inks and dye baths, comprising passing a suspension or solution of the dye over a semi-permeable membrane containing ionic groups and having a pore diameter of 1-500 Angstroms.

Osmonics, Inc. Bulletin No. 109 describes the use of a variety of reverse osmosis/ultrafiltration membranes for a variety of purposes, including use of Osmonics, Inc. SEPA-50 membrane in textile dye removal. The membrane is said to give 40-70% sodium chloride re-

[2]

jection and a molecular weight cut-off of approximately 600 for organic materials.

Spatz, Reverse Osmosis/Ultrafiltration Application to Water Reuse and Material Reclamation, May 1, 1975, at page 8, discloses that reverse osmosis/ultrafiltration membranes can be used to remove organic dyes and that some organic dyes are poorly rejected by the membrane. That is, the dye would pass through the membrane.

Spatz, Industrial Wastes, January/February 1974, pages 20-24, discloses the use of reverse osmosis/ultrafiltration membrane methods for concentrating sucrose/dye solutions used in Maraschino cherry processing so that used dyeing solutions, rather than being discarded as in the past, can be concentrated down and reused.

Thus although the general concept of the use of reverse osmosis/ultrafiltration techniques to purify and concentrate a variety of materials is known, so far as is known, the application of this technology to dyes has been restricted to its use for merely concentrating dyes for reuse either in the textile industry, as in Teed or EPO Application No. 59,782, or in Maraschino cherry dyeing, as in Spatz (Industrial Wastes).

#### SUMMARY

In accordance with the present invention, certain dyes useful in foodstuffs are not merely concentrated, as provided by the prior art, but rather are prepared in molar yields which are unprecedented in the food dye stuff industry, and at purity levels which exceed the purity standards required by the U.S. Food and Drug Administration.

These unprecedented results are achieved by essentially incorporating the purification of the dyes as part of a continuous preparation/purification process, the purification being effected by subjecting an aqueous solution of the reaction mixture resulting from preparation of the dye to ultrafiltration under conditions such that the dye can be isolated by evaporation of its solution in molar yields of approximately 98% and in a state of purity of approximately 90%. In certain instances molar yields as low as around 75% are obtained, but even in such

cases, the state of purity of the dyes which can be achieved by the present process is around 90%. In practicing the invention, it is preferred to subject the reaction mixture, which results from the preparation of the dyes, directly to ultrafiltration without isolation of the product. Alternatively, however, the products can be isolated in crude form from the reaction mixtures, either by salting out or by spray drying, and the crude product then redissolved in water and the solution subjected to ultrafiltration.

Accordingly, the invention comprises a process for purification of a dye selected from the group consisting of the disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyl) azo]-2-naphthol-6-sulfonic acid, the disodium salt of 1-[(4-sulfophenyl) azo]-2-naphthol-6-sulfonic acid, the trisodium salt of 1-[1-(4-sulfonaphthyl) azo]-2-naphthol-3,6-disulfonic acid, the disodium salt of 2-[1-(4-sulfonaphthyl) azo]-1-naphthol-4-sulfonic acid and the sodium salt of 2-(2-quinolyl)-1,3-indanedione-sulfonic acid as the products of their respective preparations via coupling of diazonium salts, in the case of the first four named dyes, and via sulfonation, in the case of the last named dye, where said dyes are present in the final reaction mixtures along with impurities, which process comprises subjecting an aqueous solution of the

[3

reaction mixture resulting from said coupling or said sulfonation to ultrafiltration through a membrane having a nominal pore diameter of from 5 to 15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g. to thereby cause separation of the impurities into the permeate and concentration of the products in the concentrate.

# DETAILED DESCRIPTION INCLUSIVE OF THE PREFERRED EMBODIMENTS

The dyestuffs, FD and C Red 40 and FD and C Yellow 6, chemically the disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyl)azo]-2-naphthol-6-sulfonic acid and the di-

sodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid, respectively, are approved by the U.S. Food and Drug Administration, and Amaranth and Carmoisine, chemically the trisodium salt of 1-[1-(4-sulfonaphthyl)azo]-2-naphthol-3,6-disulfonic acid and the disodium salt of 2-[1-(4-sulfonaphthyl)azo]-1-naphthol-4-sulfonic acid, respectively, are approved by the European Economic Community (E.E.C.), for use in foodstuffs, but as foodstuff additives, they must meet certain strict standards of purity. FD and C Red 40, FD and C Yellow 6, FD and C Red 2 and Carmoisine are each prepared in essentially "one pot" reactions by the diazotization of 5-methoxy-2-methylsulfanilic acid (FD and C Red 40), sulfanilic acid (FD and C Yellow 6), and sodium 4-amino-1-naphthalene sulfonate (FD and C Red 2 and Carmoisine), followed by coupling of the resulting respective diazonium salts with sodium 2-naphthol-6-sulfonate, for the preparation of FD and C Red 40 and FD and C Yellow 6, or with disodium 2-naphthol-3,6-disulfonate, for the preparation of FD and C Red 2, or with sodium 1-naphthol-4-sulfonate, for the preparation of Carmoisine. Moreover D and C Yellow 10, chemically the sodium salt of 2-(2-quinolyl)-1,3-indanedione sulfonic acid, is approved for use as a drug and cosmetic coloring agent. D and C Yellow 10 is also prepared in an essentially "one pot" procedure involving condensation of 2-quinaldine with phthalic anhydride followed by sulfonation of the resulting 2-(2-quinolyl)-1,3-indanedione.

Dyestuffs which are not intended for human consumption, for example those intended for use as textile dyes or printing inks, whose state of purity for such ultimate uses is not critical, can, of course, be isolated directly by evaporative concentration of the reaction mixtures in which they are produced followed by collection of the dye. Using such procedures, the final products are contaminated with major amounts of unpurities whose presence would not adversely affect the use of the dyes. However, in dyes used as food coloring agents, for ex-

ample, such product isolation procedures in which large amounts of impurities would be carried along with the product, would be completely unacceptable.

Therefore dyestuffs used as food coloring agents have conventionally been separated from impurities present in their reaction mixtures by crystallization. However, because the various dyes which are the subject of this invention are all moderately soluble in water, they have heretofore been purified of impurities present in reaction mixtures in which they are produced by the addition of large quantities of salt (sodium chloride) so as to "salt out" the product. However such salting out processes have several disadvantages. To begin with, the salt required is expensive, and furthermore the brine produced in the final filtrate presents a

#### [4]

major disposal problem for industry. Moreover, because of the high solubility of the dyes, even in brine, a high percentage of the product (from around 12% to around 20%) is lost in the brine. Thus in a typical batch containing 2,500 pounds of FD and C Red 40 in a final reaction mixture, 13,200 pounds of salt would be required in order to recover about 2,200 pounds of product, the remaining 300 pounds being lost in the filtrate after collection of the solid product by filtration.

It will be seen then that, in view of the above circumstances, the cost of the salt, the added cost to industry of disposing of the brine and the cost of the lost product can, in toto, be very substantial, resulting in greatly increased costs of the products as sold. The novel method provided by the present process overcomes these disadvantages by avoiding the need for salt and by providing for recovery of up to 98% of the product actually produced in the reaction mixture. In addition, the method produces a product having a state of purity which exceeds the purity standards required by regulatory agencies,

such as the U.S. Food and Drug Administration, or by the European Economic Community.

In accordance with the present invention for the purification of FD and C Red 40, FD and C Yellow 6, FD and C Red 2 and Carmoisine, all prepared by coupling of an appropriate diazonium salt with a naphthol sulfonic acid derivative, therefore, these advantages are realized by incorporating the purification step as part of an essentially continuous preparation/purification procedure in which the reaction mixtures resulting from the coupling of the diazonium salts of 5-methoxy-2-methylsulfanilic acid (for FD and C Red 40), sulfanilic acid (for FD and C Yellow 6) or 4-amino-1-naphthalene sulfonic acid (for FD and C Red 2 and Carmoisine), in the form of the corresponding sodium salts in each case, with sodium 2-naphthol-6-sulfonate, disodium 2-naphthol-3,6-disulfonate or sodium 1-naphthol-4-sulfonate, as the case may be, are subjected directly to ultrafiltration through a membrane having a nominal pore diameter of such limiting size that the membrane will reject all molecules of a molecular size either the same as or greater than the products, FD and C Red 40, FD and C Yellow 6, FD and C Red 2 or Carmoisine, but which will allow passage of smaller molecules, including unreacted starting materials, i.e. 5-methoxy-2methylsulfanilic acid (also known as cresidine sulfonic acid and hereinafter designated CSA), as used in the preparation of FD and C Red 40, sulfanilic acid (hereinafter designated SA), as used in the preparation of FD and C Yellow 6, 4amino-1-naphthalene sulfonic acid, as used in the preparation of FD and C Red 2 and Carmoisine, sodium 2-naphthol-6-sulfonate (also known as Schaeffer's salt and hereinafter designated SS), disodium 2-naphthol-3,6-disulfonate and sodium 1naphthol-4-sulfonate, as well as sodium chloride, which are the principal impurities to be found in the various aqueous product mixtures.

The reaction mixtures, however, may also contain impurities resulting from preparation of the 5-methoxy-2-

methylsulfanilic acid (used in the preparation of FD and C Red 40), sulfanilic acid (used in the preparation of FD and C Yellow 6) or 1-aminonaphthalene-4sulfonic acid by sulfonation of the respective 5-methoxy-2-methylaniline, aniline or 1-aminonaphthalene. These latter impurities include higher sulfonates of 5-methoxy-3-methylaniline, aniline and 1-aminonaphthalene (hereinafter designated HS) and sodium sulfate).

#### [5]

In the case of D and C Yellow 10, the principal impurities which may be found in the final product are the intermediate 2-(2-quinolyl)-1,3-indanedione, also known as Yellow 11, the disodium salt of 2-(2-quinolyl)-1,3-indanedione disulfonic acid, which results from disulfonation of Yellow 11, unreacted quinaldine, phthalic anhydride, an impurity of unknown structure designated chlorinated Yellow 11, which is produced during the high temperature, zinc chloride catalyzed condensation of 2-quinaldine and phthalic acid, and the chlorides and sulfates of sodium.

Moreover, the reaction mixtures may, in addition, contain in minor amount a variety of other impurities formed as undesired by-products, either in the preparation of FD and C Red 40 and FD and C Yellow 6, or in the preparation of starting materials used in their preparation. Thus the diazonium salt formed from 5-methoxy-3-methylsulfanilic acid can react with the amino nitrogen atom of undiazotized 5-methoxy-3-methylsulfanilic acid, in the preparation of FD and C Red 40, to form a triazene, which, in the form of the disodium salt, has the structure:

and is identified as the disodium salt of 4,4'-(diazoamino)-bis-(5-methoxy-2-methylbenzensulfonic acid) (hereinafter designated DMMA); or the same type of triazene:

identified as the disodium salt of 4,4'-(diazoamino)-bis-(benzenesulfonic acid) (hereinafter designated DAAB) can be formed in the preparation of FD and C Yellow 6; or a dinaphthyl ether:

identified as the disodium salt of 6,6'-oxybis-(2-naphthalenesulfonic acid) (hereinafter designated DONS) can be produced as a by-product in the preparation of sodium 2-naphthol-6-sulfonate by sulfonation of 2-naphthol.

Thus it will be seen that the reaction mixtures resulting from the preparation of the various dyes purified in accordance with the invention can possibly contain in minor amounts, along with the desired products, a complex mixture of impurities. The economical separation of the wide variety of impurities from the products in the present process, in order to achieve the levels of purity required by FDA regulations, is thus a critical aspect of the preparation of these dyestuffs for commerce.

The presence of some of those impurities in the final products can, of course, be minimized by use of purified starting materials so that impurities from that source are

[6]

not carried along in the synthetic process to the final product mixture. It will be appreciated from the foregoing that large molecular size impurities, which will be retained by the membranes, cannot be present in the solution to be purified by the present process at concentrations which would be unacceptable in the final product, because they would be rejected by the membranes, along with the desired product, and not separable therefrom by the present process.

The membranes used in the practice of the present process, and generally referred to as reverse osmosis/ ultrafiltration membranes, have a nominal pore diameter of 5-15 Angstroms, a preferred range being from 7-11 Angstroms. Membranes useful in the practice of the present invention are manufactured by Osmonics Inc. of Minnetonka, Minn. or by the Celanese Corporation and are generally formulated of cellulose acetate, polyamide or polyvinylfluoride. The filtration is carried out under a hydrostatic pressure of approximately 200 to 400 p.s.i.g. applied to the upstream side of the membrane. By use of a membrane having the appropriate critical pore size, those impurities of a molecular size smaller than the nominal pore diameter of the membrane, along with a large quantity of water, are thus forced through the membrane and accumulate on the downstream side as the permeate, while the desired product molecules, as well as impurities of a molecular size larger than the nominal pore diameter of the membrane, are rejected by the membrane and remain on the upstream side thereof where the product becomes more and more concentrated as more and more water and impurities are forced to the downstream side.

As indicated above, although the membranes used in the present process are referred to generically as reverse osmosis/ultrafiltration membranes, the term "reverse osmosis" generally refers to membranes which reject all solute particles, including ions, and will pass only water molecules, while the term "ultrafiltration" generally refers to membranes which will reject only solute particles above a certain molecular size and will pass smaller particles. (See, for example, Lacey, Chemical Engineering, Sept. 4, 1982, page 5). In the context of the present invention, therefore, the term "ultrafiltration" is considered more

appropriate than the term "reverse osmosis" and accordingly is used to describe the invention.

In the preferred practice of the present process, the reaction mixture resulting from the last step in the synthetic procedure, i.e. the diazonium coupling reaction in the preparation of FD and C Red 40, FD and C Yellow 6, FD and C Red 2 or Carmoisine or the sulfonation reaction in the preparation of D and C Yellow 10, is passed to a holding tank and optionally filtered, to remove any insoluble material, before being fed to an ultrafiltration unit where, under a pressure of approximatey 200 to 400 p.s.i.g., supplied by a high pressure centrifugal pump, the impurities are forced through the membrane into the permeate which can be collected for analysis or passed directly to waste lines for disposal. Alternatively the crude product previously isolated, by salting out or spray drying, can be redissolved in water and the resulting solution treated as just described.

In one embodiment contemplated by the invention, the solution from the holding tank is fed continuously to the ultrafiltration unit, while solution from the upstream side of the membrane is recirculated back to the tank. Thus ultrafiltration is carried out continuously, the

[7]

concentrate in the tank being continually depleted of impurities, and water is added to the concentrate (to replace that removed in the permeate with the impurities) at such a rate as to maintain the concentration of the product in the concentrate at approximately 5% (w/w). This procedure is referred to hereinafter as diafiltration.

In another embodiment contemplated by the invention, the concentrate from the upstream side of the membrane is recirculated back to the holding tank to be replaced by additional solution fed from the tank. However, instead of replacing the water lost from the system into the permeate as in the diafiltration method, the product is al-

lowed to concentrate in the holding tank, the extent of such concentration, of course, not being allowed to proceed to the point where crystallization of the product would occur. In such instance, additional water is added to insure complete solution of the product at all times so as to obviate plugging of the membrane pores by the crystalline material. Typically the concentration of the product in the concentrate is maintained between approximately 5% and 25% (w/w).

In both of the above-described embodiments, the progressive removal of impurities is followed by sampling the permeate from time to time, and filtration is terminated when essentially no further impurities can be detected in the permeate and, in the case of FD and C Red 40, FD and C Yellow 6, FD and C Red 2 and Carmoisine, when, in addition, the level of sodium naphtholsulfonates, in the concentrate is determined (by appropriate analytical methods such as HPLC, TLC, etc.) to be less than 0.3% of the pure color content. The essential absence of impurities in the permeate can be determined in a variety of ways, such as by determining its electrical conductance. In that method, the conductance of the permeate gradually drops during ultrafiltration because of the continuous removal of ionic species from the concentrate. When the conductance of the permeate drops from an initial level of approximately 50,000 micromhos to approximately 1,000 micromhos, and when the level of sodium naphtholsulfonates in the concentrate reaches the desired level, as indicated above, the removal of essentially all impurities can be considered compete. When that point is reached, the concentrate, containing the highly purified product in water, is evaporated to dryness by any of a number of conventional means, for example, by pan drying or spray drying, in order to isolate the product. In this manner, one can obtain molar yields up to 98% in the process. In contrast, for example, yields of only around 77% of the total available pure color (for FD and C Yellow 6) and 86% of the total available

pure color (for FD and C Red 40) are obtainable using the salting out method of isolation.

In carrying out the present process the reaction mixture, as produced in the diazo coupling and as fed to the ultrafiltration unit, generally has a pH of approximately 9.0. While these solutions can be subjected successfully to ultrafiltration, it is preferred to adjust the pH to approximately 6.0 to 8.0 before passage through the ultrafiltration membrane.

The ultrafiltration process is preferably carried out at ambient temperature but can be carried out at temperatures up to around 40° C.

In order to further describe the invention and the unique advantages afforded thereby, the following examples are included by way of illustration in order to contrast the preparation and purification of FD and C

#### [8]

Red 40 and FD and C Yellow 6, in accordance with the present invention, with the preparation and purification of the same by conventional methods. The preparation and purification of FD and C Red 2, Carmoisine and D and C Yellow 10, in accordance with the process of the invention further illustrate the same.

#### **EXAMPLE** 1

Preparation and Purification of FD and C Red 40 by the Method of the Invention

#### Diazotization

To a rubber lined 1,500 gallon tank was added 3,550 pounds of water and 1,085 pounds of 5-methoxy-2-methyl-sulfanilic acid, and the pH of the solution was adjusted to 6.0 to 8.0 by the addition of about 550 pounds of 50% sodium hydroxide. The mixture was stirred, and when all material had dissolved, the solution was treated

with 350 pounds of sodium nitrite, stirring until all material had dissolved, and was then cooled to 25°-30° C. by the addition of ice.

To a separate rubber lined 3,000 gallon tank was added 2,300 pounds of water, followed by 1,510 pounds of 20° Bé hydrochloric acid and 2,000 pounds of ice, and the solution was cooled to -5° C. to 0° C. The solution from the 1,500 gallon tank was then pumped slowly into the 3,000 gallon tank while checking the pH frequently in order to maintain acid conditions (blue to Congo Red) and checking frequently for excess nitrite with starch/iodide paper in order to insure that excess nitrite is present during the diazotization. (When all the solution from the first tank has been added, the test for nitrite should be positive, and if necessary an additional 1 to 2 pounds of sodium nitrite is added to give a positive test for nitrite.) The reaction mixture was stirred at 0°-5° C. for about one to one and a quarter hours, while maintaining a slight excess of nitrite ion.

#### Preparation of SS Solution

To another rubber lined 6,500 gallon tank were added 8,000 pounds of water, 1,000 pounds of sodium carbonate and 1,255 pounds of sodium 2-naphthol-6-sulfonate. The resulting slurry was agitated until uniform and saved for coupling.

#### Coupling Reaction

The diazotized solution from the 3,000 gallon tank, at 0°-5° C., was then slowly pumped into the 6,500 gallon tank at 20°-25° C. over a one half to one hour period, while testing frequently for excess diazo compound against alkaline H-Acid solution (8-amino-1-naphthol-3,6-disulfonic acid), and if excess diazo compound was detected, the rate of addition of the diazo solution was adjusted to give a continuous negative test. The solution was also tested from time to time to insure a continued excess of sodium 2-naphthol-6-sulfonate against Diazo Blue B solution (2,2-dimethyl-4,4'-bis diazo-biphenyl dichlo-

ride), and to insure that the pH of the solution remains alkaline. (When all the diazo solution has been added, the temperature should be 20°-25° C., the test for diazo compound should be negative, the test for sodium 2-naphthol-6-sulfonate should be positive, and the pH should be 8.3 to 8.8.)

The solution was then stirred for an additional half hour, the pH was adjusted to 6.5 to 6.7 by the addition of 20° Bé hydrochloric acid and treated with 50 pounds of DICALITE® brand of diatomaceous earth and 180 pounds of DARCO® S51 brand of decolorizing char-

#### [9]

coal. The solution was then heated and stirred at 70°-75° C. for a half hour and then filtered. The filter was washed with about 4,500 pounds of water, and the combined filtrate was adjusted to pH 6.0 to 8.0 by addition of hydrochloric acid and was then led to a holding tank. From that solution was taken a 12 gallon aliquot amounting to 0.2% of the total product, together with impurities which was fed through a high pressure centrifugal pump to an ultrafiltration unit equipped with a cellulose acetate membrane having a nominal pore diameter of 11 Angstroms and under a hydrostatic pressure of 200-400 p.s.i.g. and subjected to diafiltration. That is, the concentrate was recycled back to the holding tank where the concentration of the product was maintained at around 5% by the addition of water. The permate was collected separately and tested from time to time for its conductance, and the concentrate was tested from time to time for the total amount of SS relative to the total color. After a total of five cycles (of the product solution to the ultrafiltration unit and back to the holding tank), when the conductance had dropped to around 1,000 micromhos, and the amount of SS in the concentrate was less than 0.3% of the pure color content, ultrafiltration was interrupted. During the filtration the total pure color that passed through the membrane was determined, by either spectrometric methods or by visual comparison with known color standards, to constitute about 2% of the total available color in the original unfiltered solution from the reaction mixture thus leaving 98% of the total available pure color in the concentrate. The ultrafiltration process as described above afforded 2 gallons of purified concentrate. From this concentrate was take a further 600 ml. aliquot which was spray dried to give 150 g. of purified product which, on assay, had the following specifications, the range of specifications required by regulations of the Food and Drug Administration being included for purposes of comparison. Here, and in all tables which follow, unless noted otherwise, all values are given in percent.

	Found	FDA Spec.
Pure Color	91.9	85
NaCl	0.03	
Na <sub>2</sub> SO <sub>4</sub>	0.56	14*
Volatiles	6.14	
CSA	< 0.02	0.2
SS	0.01	0.3
DMMA	< 0.02	0.1
HS	< 0.3	1.0
DONS	< 0.05	1.0

\*The FDA specifications require that the total amount of NaCl, Na<sub>2</sub>SO<sub>4</sub> and Volatiles be not more than 14%. In each of the assays reported herein, separate values for each of these entries were determined and are recorded. The totals, in each case, will be seen to be within the required limits.

Two further samples of FD and C Red 40, prepared as described above, were purified by diafiltration using the procedure described above except that in one run a polyamide membrane having a nominal pore diameter of 7-10 Angstroms (Zero PA membrane obtained from the Celanese Corporation) was used and in a second run a polyvinylfluoride membrane having a nominal pore diameter of 10 Angstroms (20 VF membrane from Os-

monics, Inc.) was used, to give 97% recovery of product in each case. The samples so purified had the following specifications, the ranges of specifications required by FDA regulations being given again for comparative purposes.

[10]

	For	and	
	Zero PA	20 VF	FDA Spec
Pure Color	88.4	89.3	85
NaCl	0.05	0.06	
Na <sub>2</sub> SO <sub>4</sub>	0.78	0.67	14
Volatiles	9.22	9.41	
CSA	< 0.02	< 0.02	0.2
SS	0.03	< 0.02	0.3
DMMA	0.16	< 0.02	0.1
HS	0.3	0.3	1.0
DONS	< 0.05	< 0.05	1.0

Preparation and Purification of FD and C Red 40 by the Prior Method

The above procedure was repeated through the filtration of the solution from the coupling reaction and the washing of the filter with 4,500 pounds of water. The combined filtrate was transferred to a 7,000 gallon stainless steel crystallization tank. To the tank was added 9,000 pounds of salt (equivalent to 18% of the solution volume) over a period of one half to one hour and while maintaining the temperature at abut 65° C.

The crystalline material which separated was collected by filtration, and the solid was washed on the filter sequentially with 1,200 gallons each of 18° Be and 12° Be brine at 0° C. to 5° C. The filter was given a final wash with a solution of 750 gallons of water and 450 gallons of ethyl alcohol, and the product was collected and dried. There was thus obtained 2,170 pounds (87.5% yield based on 5-methoxy-2-methylsulfanilic acid) of the disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyl)azo]-2-naphthol-6-sulfonic acid.

The material so-obtained in a series of similar runs was assayed in each case, in accordance with Food and Drug Administration regulations, and found to have the following ranges of specifications, the specifications obtained with material purified in accordance with the process of the invention as described above and specifications required by regulations of the Food and Drug Administration being given for purposes of comparison.

	Found (%)	Claimed Process	FDA Spec. (%)
Pure Color	88-92	91.9	85
NaCl	2.0-3.5	0.03	
Na <sub>2</sub> SO <sub>4</sub>	0.05-0.1	0.56	14
Volatiles	3.3-7.0	6.14	
CSA	0.02	< 0.02	0.2
SS	0.02-0.2	0.01	0.3
DMMA	0.02	< 0.02	0.1
HS	0.2-1.0	< 0.05	1.0
DONS	0.1-0.2	< 0.05	1.0

#### **EXAMPLE 2**

Preparation and Purification of FD and C Yellow 6 by the Method of the Invention

#### Diazotization

To a rubber lined 1,500 gallon tank was added 2,000 pounds of water followed by 1,038 pounds of sulfanilic acid and 490 pounds of sodium hydroxide, and the mixture was heated to 45° C. and stirred until all material dissolved. Additional sodium hydroxide was added as

necessary to make the solution alkaline to Brilliant Yellow.

#### [11]

To the resulting solution was added, slowly and with stirring, 1,800 pounds of 20° Bé hydrochloric acid. When addition was complete, the mixture, which consisted of a slurry of sulfanilic acid in the liquid phase, was tested for acidity to Congo Red, and additional hydrochloric acid added as necessary to adjust the pH accordingly. The mixture was then cooled to 0° C. by addition of ice (about 3,000 pounds), and the solution was treated slowly, over a five to ten minute period, with a solution of 420 pounds of sodium nitrite in 1,000 pounds of water, while maintaining the temperature at 10°-12° C., the solution being added at such rate that no nitrous oxide was given off from the mixture. (When addition of the sodium nitrite is complete, the mixture should be positive to nitrite, and if not an additional 1 to 2 pounds of sodium nitrite are added to insure a slight excess.)

#### Preparation of SS Solution

In a separate rubber lined 6,500 gallon tank containing 5,000 pounds of water was added 1,480 pounds of sodium 2-naphthol-6-sulfonate, and the mixture was stirred until a smooth slurry was obtained. The pH was adjusted to 9.3 to 9.5 with 50% sodium hydroxide and then cooled, if necessary, to 20°-25° C. with ice.

#### Coupling Reaction

The diazo solution from the first tank, at 0°-5° C., was then pumped into the second tank over about a half hour period while maintaining the pH at 8.5 to 9.0 by addition of 50% sodium hydroxide, testing frequently for excess diazo compound with alkaline H-Acid. If excess diazo compound was detected, the rate of addition of the diazo solution was adjusted to give a continuous negative test. The solution was also tested from time

to time for excess sodium 2-naphthol-6-sulfonic acid against Diazo Blue B solution in order to insure the continuous presence of an excess thereof. (When all the diazo solution has been added, the temperature should be 20°-25° C., the test for excess diazo compound should be negative, the test for sodium 2-naphthol-6-sulfonate should be positive, and the pH should be 8.4 to 9.0.)

The solution was then stirred for an additional half hour, the pH was adjusted to 6.5 to 6.7 by the addition of 20° Bé hydrochloric acid and treated with 50 pounds of DICALITE® and 180 pounds of DARCO® S51. The solution was then heated and stirred at 70°-75° C. for a half hour and filtered. The filter was washed with about 4,500 pounds of water, and the combined filtrate was adjusted to pH 6.0 to 8.0 by addition of hydrochloric acid and was then led to a holding tank. From that solution was taken a 9 gallon aliquot, amount to 0.2% of the total product together with impurities, which was then fed through a high pressure centrifugal pump to an ultrafiltration unit equipped with a cellulose acetate membrane having a nominal pore diameter of 11 Angstroms and under a hydrostatic pressure of 200-400 p.s.i.g., the concentrate being recycled back to the holding tank where the concentration of the product was maintained at approximately 5% by addition of water. The permeate was collected separately and tested from time to time for its conductance, and the concentrate was tested from time to time for the total amount of SS relative to the total color. After a total of five cycles (of the product solution to the ultrafiltration unit and back to the holding tank), when the conductance of the permeate had dropped to around 1,000 micromhos, and the

#### [12]

amount of SS in the concentrate was less than 0.3% of the pure color content, diafiltration was interrupted. During the filtration the total pure color that passed through the membrane was determined, by either spectrometric methods or by visual comparison with known color standards, to constitute approximately 5% of the total available color in the original unfiltered solution from the reaction mixture thus leaving 95% of the total available pure color in the concentrate. The ultrafiltration process as described above afforded 4.5 gallons of purified concentrate. From this concentrate was taken a further 800 ml. aliquot which was spray dried to give 54 g. of purified product which, on assay, had the following specifications, the range of specifications required by regulations of the Food and Drug Administration being included for purposes of comparison.

	Found	FDA Spec.
Pure Color	92.2	85
NaCl	0.26	
Na,SO,	2.80	14
Volatiles	4.89	
SA	0.02	0.2
SS	0.1	0.3
DAAB	0.02	0.1
DONS	< 0.2	1.0

#### Preparation and Purification of FD and C Yellow 6 by the Prior Method

The above procedure was repeated through the filtration of the solution from the coupling reaction and the washing of the filter with 4,500 pounds of water. The combined filtrate was transfererd to a 7,000 gallon stainless steel crystallization tank. To the tank was added, over a period of a half hour at 70° C., an amount of sodium chloride equivalent to about 17% of the total volume (8,000-9,000 pounds).

The crystalline material which separated was collected by filtration, and the solid was washed on the filter with 1,200 gallons of 18° Bé brine, then four times with 2° Bé brine at 0°-2° C. (1,200 gallons per wash), three more times with 18° Bé brine (1,200 gallons per wash) and finally two times with 1,200 gallons of water at 0° C. and then dried. There was thus obtained 2,100 pounds of the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid (77% yield based on sodium 2-naphthol-6-sulfonate).

The material so-obtained in a series of similar runs was assayed in each case, in accordance with Food and Drug Administration regulations, and found to have the following range of specifications, the specifications obtained with material purified in accordance with the process of the invention as described above and specifications required by regulations of the Food and Drug Administration being given also for purposes of comparison.

	Found	Claimed Process	FDA Spec.
Pure Color	89-92	92.2	85
NaCl	3.4-5.0	0.26	
Na,SO,	< 0.05	2.80	14
Volatiles	1.7-5.4	4.89	
SA	0.02	0.02	0.2
SS	0.04-0.08	0.1	0.3
DAAB	0.02	0.02	0.1
	[1	3]	
DONS	0.07-0.2	< 0.02	1.0

#### EXAMPLE 3

Preparation and Purification of FD and C Red 2

#### Diazotization

A 10 liter glass reactor was charged with 7.5 liters of tap water and 965 g. of sodium 4amino-1-naphthalene sulfonate (76%, 3 moles). The mixture was stirred until

the sulfonate dissolved, and the solution was then treated with 30 g. of NORIT® FQA brand of decolorizing charcoal and the resulting slurry filtered. The filtrate was acidified with 911 g. of 20° Bé hydrochloric acid, and the resulting slurry was cooled with ice to 5°-10° C. and diazotized by the dropwise addition of 500 ml. of an aqueous solution of 209 g. (3.03 moles) of sodium nitrite over a one and one quarter hour period, while maintaining the temperature and pH throughout the addition at <10° C. and 1, respectively. When all the nitrite had been added, the diazonium salt slurry was stirred at 0°-10° C. and pH 1 for three hours, and the presence of excess nitrous acid was verified periodically by testing with starch/potassium iodide paper, additional sodium nitrite being added to maintain a positive test.

#### Coupling Reaction

A 20 liter glass reactor was charged with 6.3 liters of tap water, 1328 g. of disodium 2naphthol-3,6-disulfonate (81%, 3.09 moles) and 569 g. (5.37 moles) of sodium carbonate. The mixture was stirred until the sodium carbonate and the disulfonate salt had dissolved, and the diazonium salt slurry from the previous step was added to the solution over a ninety minute period, while maintaining the temperature and the pH at 18°-25° C. and 8-10, respectively, and while testing frequently for excess diazo compound with alkaline H-Acid in order to insure a continuous negative test with respect to the diazo compound. The solution was then treated with 7 g. of NORIT®FOA brand of activated charcoal and 35 g. of DICALITE® brand of diatomaceous earth and then heated to 55° C. for two and a half hours. The slurry was then filtered, cooled to room temperature and the filtrate subjected to diafiltration as described above using a cellulose acetate membrane having a nominal pore diameter of 11 Angstroms until the conductance of the concentrate and the permeate levelled off at 11,000 micromhos and 650 micromhos, respectively. The concentrate was then further concentrated to about 3.75 gallons by ultrafiltration. A 500 ml. aliquot of this concentrate was spray dried to give 67 g. of FD and C Red 2 (Amaranth) powder, corresponding to a total pure color recovery of 1772 g. or 98% of theory. This material, on assay, had the following specifications, the specifications required by EEC regulations being included for purposes of comparison.

	Found	EEC Spec.
Pure Color	91.0	85
NaCl, Na,SO,	1.04	5
Volatiles	7.04	10
	[14]	
Subsidiary Colors	0.9	3

#### **EXAMPLE 4**

Preparation and Purification of Carmoisine by the Method of the Invention

#### Diazotization

A 10 liter glass reactor was charged with 5.5 liters of water and 772 g. (76%, 2.24 moles) of sodium 4-amino-1-naphthalene sulfonate, and the mixture was stirred until the sulfonate dissolved. The resulting solution was treated with 30 g. of NORIT® FQA brand of activated charcoal, the slurry was filtered, and the filtrate was acidified with 878 g. of 20° Bé hydrochloric acid. The resulting slurry was then cooled to 5°-10° C. and diazotized by the dropwise addition of 500 ml. of an aqueous solution of 156 g. (2.26 moles) of sodium nitrite over a one and one quarter hour period, while maintaining the temperature and pH of the reaction mixture at 10° C. and 1, respectively. When all the nitrite solution had been added, the resulting slurry was stirred at 0°-10° C. and pH of about 1 for three hours while testing periodically with starch/

potassium iodide paper to insure a slight excess of nitrous acid at all times.

#### **Coupling Reaction**

A 20 liter glass reactor was charged with 5.5 liters of water and 425 g. of sodium carbonate, the solution was stirred until the carbonate dissolved, and then 630 g. (91.7%, 2.35 moles) of sodium 1-naphthol-4-sulfonic acid was added with stirring until all material had dissolved. The solution was then cooled to 5° C., and the previously prepared solution of the diazonium salt was then added over a period of approximately one hour while maintaining the temperature and pH at 5°-6° C. and 9-11, respectively.

The pH of the resulting solution was adjusted to 6-7 and subjected to diafiltration through a cellulous acetate membrane having a nominal pore diameter of 11 Angstroms at 200-400 p.s.i.g. and 2-3 gallons per minute. The diafiltration was continued until the concentrate and the permeate conductivities had leveled off at 5,000-10,000 micromhos and <1,000 micromhos, respectively, and the concentrate was then further concentrated to a total volume of about 4 gallons. A 500 ml. aliquot of this concentrate was spray dried to give 41 g. of pure dye, corresponding to a total recovery of 98% of theory. The material, on assay, had the following specifications, the specifications required by regulations of the E.E.C. being provided for purposes of comparison.

	Found	EEC Spec.	
Pure Color	89.0	85	
NaCl	0.07	N/A	
Na <sub>2</sub> SO <sub>4</sub>	2.26	N/A	
Volatiles	1.64	N/A	
Subsidiary	<1.0	1.0	
Colors			
Unreacted	< 0.5	0.5	
Intermediates			

[15]

#### **EXAMPLE 5**

#### Purification of D and C Yellow 10 by the Method of the Invention

To a 22 liter glass reactor charged with 16 liters of distilled water was added 803 g. of Quinoline Yellow WS (approximately 60% pure dye), and the solution was stirred until the solid had dissolved. The solution was then treated with 288 g. of DARCO® S-51 brand of activated charcoal and 100 g. of DICALITE® brand of diatomaceous earth, and the resulting mixture was heated to 80°-90° C. for two hours and then filtered. The filtrate was cooled to 30°-40° C. and then subjected to diafiltration through a Zero PA polyamide membrane having a nominal pore diameter of 7-10 Angstroms until the conductance of the permeate and the concentrate levelled off at 200-500 micromhos and 5,000-7,000 micromhos, respectively. The concentrate was then further concentrated to 3.5 gallons and a 1 gallon aliquot thereof was spray dried to give 103 g. of purified material, corresponding to 75% total recovery. The purified sample thus obtained, on assay, gave the following specifications, the corresponding specifications of the crude material prior to ultrafiltration and the specifications required by FDA regulations being provided for purposes of comparison.

	Found			
	Crude	Purified	FDA Spec.	
Pure Color	60	89	85	
NaCl	12)	0.1		
Na SO	20	4.0	15	
Volatiles	8.0	6.1		
Yellow 11	108 ppm	< 0.1  ppm	4 ppm	
Chlorinated	1190 ppm	< 0.1  ppm	2 ppm	
Yellow 11				

We claim:

1. In a process for the purification of a dye selected from the group consisting of the disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyi)azo]-2-naphthol-6-sulfonic acid, the disodium salt of 1-[(4-sulfophenyl) azo]-2-naphthol-6-sulfonic acid, the trisodium salt of 1-[1-(4-sulfonaphthyl)azo]-2-naphthol-3,6-disulfonic the disodium salt of 2-[1-(4-sulfonaphthyl)azo]-1-naphthol-4-sulfonic acid and the sodium salt of 2-(2-quinolyl)-1,3-indanedione-sulfonic acid as the products resulting. respectively, from the diazotization of 5-methoxy-2-methylsulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 5-methoxy-4-sulfo-2-methylphenyldiazonium chloride with sodium 2-naphthol-6-sulfonate; the diazotization of sulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 4-sulfophenyldiazonium chloride with sodium 2naphthol-6-sulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with disodium 2-naphthol-3,6-disulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with sodium 1-naphthol-4-sulfonate; and the condensation of 2-quinaldine with phthalic anhydride followed by sulfo-

[16]

nation of the resulting 2-(2-quinolyl)-1,3-indanedione, said dye being present in the resulting reaction mixtures, along with impurities, the improvement which comprises: subjecting an aqueous solution of the reaction mixture resulting from said coupling or said sulfonation to ultrafiltration through a membrane having a nominal

pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing into the permeate on the downstream side of said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate, as evidenced by their essential absence in said permeate, recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.

- A process according to claim 1 wherein said membrane is composed of cellulose acetate, polyamide or polyvinylfluoride.
- 3. A process according to claim 2 wherein the concentration of the dye in said concentrate is maintained at approximately 5-25% (w/w) by recycling the concentrate and adding water thereto.
- 4. A process according to claim 2 wherein ultrafiltration is carried out until the concentration of the azo dye in the concentrate is maintained at approximately 5% (w/w).
- 5. A process according to claim 3 wherein the pH of the reaction mixture is adjusted to 6.0 to 8.0 before ultrafiltration.
- 6. A process according to claim 4 wherein the pH of the reaction mixture is adjusted to 6.0 to 8.0 before ultrafiltration.
- 7. A process according to claim 5 wherein ultrafiltration is interrupted, and the product isolated, when the conductance of the permeate is approximately 1,000 micromhos.
- 8. A process according to claim 6 wherein ultrafiltration is interrupted, and the product isolated, when the

conductance of the permeate is approximately 1,000 micromhos.

- A process according to claim 7 wherein the product is isolated by spray drying of the concentrate.
- 10. A process according to claim 7 wherein the product is isolated by pan drying of the concentrate.
- A process according to claim 8 wherein the product is isolated by spray drying of the concentrate.
- A process according to claim 8 wherein the product is isolated by pan drying of the concentrate.
- 13. A process according to claim 1 wherein said dye is the disodium salt of 1-[(6-methoxy-4-sulfo-3-methyl-phenyl)azo]-2-naphthol-6-sulfonic acid.
- 14. A process according to claim 1 wherein said dye is the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid.
- 15. A process according to claim 1 wherein said dye is the trisodium salt of 1-[1-4-sulfonaphthyl)azo]-2-naphthol-3,6-disulfonic acid.
- 16. A process according to claim 1 wherein said dye is the disodium salt of 2-[1-(4-sulfonaphthyl)azo]-1-naphthol-4-sulfonic acid.
- 17. A process according to claim 1 wherein said dye is the sodium salt of 2-(2-quinolyl)-1,3-indanedione-sulfonic acid.

[Filed Apr. 23, 1991]

#### IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF OHIO WESTERN DIVISION

Civil Action No. C-1-91-218 (Weber, J.)

HILTON DAVIS CHEMICAL Co., Plaintiff.

WARNER-JENKINSON,

Defendant.

#### ANSWER

Defendant, through its attorneys, hereby answers the Complaint herein as follows:

- 1. Defendant admits that plaintiff's First Cause of Action purports to state a cause of action for patent infringement under Title 35, United States Code, but denies that any such cause of action exists. Defendant admits that this Court has jurisdiction of this cause of action and that venue is proper in this district.
- 2. On information and belief, defendant admits the allegation of paragraph 2.
  - 3. Defendant admits the allegation of paragraph 3.
- 4. Defendant admits that a copy of U.S. Patent No. 4,560,746 was attached to the Complaint as Exhibit A and shows on its face that it was issued on December 24, 1985, for an Ultrafiltration Process for Purification of Dyes Useful in Foodstuffs, and was assigned to the Hilton-Davis Chemical Co. Defendant denies, however, that said patent was duly and legally issued.

5. Defendant denies the allegation of paragraph 5.

## Affirmative Defenses

- 1. Defendant has not infringed U.S. Patent No. 4,560,746.
- 2. Upon information and belief, U.S. Patent No. 4,560,746 is invalid for failure to comply with the statutory requirements of Title 35 of the United States Code.

### WHEREFORE, defendant demands as follows:

- A. That judgment be entered in its favor on the Complaint and that the Complaint be dismissed with prejudice and plaintiff take nothing by its action.
- B. That defendant be awarded its costs and attorney fees incurred in the defense of this action.
- C. That defendant have such other and further relief as this Court may deemed just and proper.

WARNER-JENKINSON COMPANY, INC.

By /s/ J. Robert Chambers
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[Certificate of Service Omitted in Printing]

## JURY INSTRUCTIONS

JUNE 10, 1992

\* \* \* \*

[2028] THE COURT: Ladies and gentlemen, I'm going to ask [2029] Mrs. Jones to distribute a copy of the charge or the instructions of law to you. You can follow along or not, just however you choose. It is my duty to read them into the record at this time. The instructions that I'm reading from are here and we will put them in the notebook for your information with the verdict forms.

Members of the jury, your job as jurors is to determine the issues of fact presented by the claims of the parties and reach a just verdict.

In doing your job, you must follow the law as stated in these instructions and apply these rules of law to the facts you find from the legal evidence.

You are not to single out one instruction alone as stating the law, but must consider the instructions as a whole.

You are not to be concerned with the wisdom of any rule of law. Regardless of any opinion you may have as to what the law ought to be, it would be a violation of your sworn duty to base a verdict upon any other view of the law than that given in these instructions, just as it would be a violation of your sworn duty as judges of the facts to base a verdict upon anything but the legal evidence in the case.

You are to perform this duty without bias or prejudice as to any party. Our system of law does not permit jurors to be governed by sympathy, prejudice, or public opinion. Both the parties and the public expect that you will [2030] carefully and impartially consider all the legal evidence in the case, follow the law as stated by the

Court, and reach a just verdict regardless of the consequences.

This case should be considered and decided by you as an action between persons of equal worth and equal standing in the community. Businesses, corporations and governmental units are entitled to the same fair trial at your hands as private individuals. All persons, including businesses, corporations and governmental units, stand equal before the law and are to be dealt with as equals in a court of justice. Sympathy for a party or prejudice against a party should play no part in your deliberations or in your decision.

Unless otherwise stated, the jury should consider each instruction given to apply separately and individually to each party.

The person who asserts a claim has the burden of proof, that is, he or she has the obligation to prove it by a certain level of proof.

There are two levels of proof involved in this case: proof by clear and convincing legal evidence and proof by a preponderance of the legal evidence.

The defendant has the burden of establishing the invalidity of the claims of the patent by clear and convincing evidence. The plaintiff has the burden of proving infringement and damages, if any, by a preponderance of the legal evidence.

[2031] The plaintiff has the burden of establishing that the defendant's infringement of the claims of the patent by a defendant, if any, was willful by clear and convincing evidence.

It is the quality of the legal evidence that must be weighed. Quality is not necessarily identical with quantity or the greater number of witnesses.

In determining whether any fact in issue has been proved by the legal evidence in the case, you may, unless otherwise instructed, consider the testimony of all witnesses, regardless of who may have called them, and all exhibits received as legal evidence, regardless of who may have produced them.

Preponderance of the legal evidence is the greater weight of the evidence. That is, legal evidence that you believe because it outweighs or overbalances in your minds the legal evidence opposed to it and because it is more probable, more persuasive or of greater probative value.

If the weight of the legal evidence is equally balanced or if you are unable to determine which side of an issue has been proved by a preponderance of the legal evidence, the party who has the burden of proof has not established such issue by a preponderance of the legal evidence.

This rule of law does not, of course, require proof to an absolute certainty, since proof to an absolute certainty [2032] is seldom possible in any case.

It is proper to find that a party has succeeded in carrying the burden of proof by a preponderance of the legal evidence on an issue of fact, if, after consideration of the legal evidence, the jurors believe that what is sought to be proved on that issue is more likely true than not true.

Clear and convincing legal evidence is legal evidence which produces in your mind a firm belief that the truth of the factual contentions are highly probable. Clear and convincing proof is proof of the facts which lies somewhere between preponderance of the evidence and beyond a reasonable doubt.

Legal evidence is the testimony of witnesses, the exhibits which you will have with you in the jury room, regardless of who may have produced them, and the facts which have been admitted or stipulated.

Once facts have been proved by the legal evidence, you may then draw such reasonable inferences from those facts you feel are justified in the light of your experience.

The legal evidence does not include the exhibits which have not been given to you in the jury room, the opening statements or the closing arguments of counsel. The opening statements and closing arguments of counsel are designed to assist you. They are not legal evidence.

Statements or answers which were stricken by the [2033] Court or which you were instructed to disregard are not legal evidence and must be treated as though you never heard them. Likewise, anything you may have perceived outside the courtroom is not legal evidence and must be entirely disregarded.

You must not speculate as to why the Court sustained the objection to any question or what the answer to such question might have been. You must not draw any inference or speculate on the truth of any suggestion included in a question that was not answered. It is the duty of the attorneys on both sides to make their objections and protect the interests of their clients. You are not to infer in any manner that either side was attempting to withhold any evidence from you as a result of objecting to the evidence, whether it was subsequently admitted by the Court or subsequently ruled inadmissible.

You must not draw any inference or speculate on the truth of any suggestion included in a question that was not answered.

If a lawyer asks the witness a question which contains an assertion of fact, you may not consider the assertion of fact as legal evidence of that fact unless adopted or confirmed by the witness. The lawyer's assertion of facts are not legal evidence.

The questions of lawyers may be considered, however, to the extent that they give meaning to the answers of the [2034] witnesses.

There are, generally speaking, two types of legal evidence which the jury may properly find the truth as to the facts of the case. Direct evidence is testimony given by a witness who has personal knowledge of the facts to which he or she testifies.

Circumstantial evidence is the proof of facts or circumstances by direct evidence from which you may reasonably infer other related or connected facts which naturally and logically follow, according to the common experience of people.

To infer, or to make an inference, is to reach a reasonable conclusion of fact which you may, but are not required to, make from other facts which you find have been established by direct evidence. Whether an inference is made rests entirely with you.

You may not build one inference from another inference which is unsupported by any additional facts, but you may make more than one inference from the same facts or circumstances if it is reasonable to do so. Additionally, you may not draw inferences from a speculative or remote basis that has not been established by the legal evidence.

As a general rule, the law makes no distinction between direct and circumstantial evidence, but simply requires that you find the facts in accordance with the legal evidence [2035] in the case, both direct and circumstantial.

In your effort to determine the facts, you will be faced with the problem of what weight should be given to the testimony of each witness. You must determine how credible or believable any witness is. You may believe all that a witness tells you, part of what he or she tells you, or none of what he or she tells you.

Consider carefully the circumstances under which each witness testified. Remember the response to questions, assurance or lack of it in answering, and the entire demeanor or appearance of the witness while on the wit-

ness stand. Consider also any relationship that may bear to either side of the case, their reasons for testifying, or any interest they may have in the outcome of the case, any prejudice or bias they may have shown, including any reason or motivation to bear hostility or animosity toward any party, and any partiality they may have demonstrated.

In dealing with contradictory testimony, you may consider which testimony is supported or contradicted by the exhibits admitted into legal evidence.

Material inconsistencies or discrepancies in the testimony of a witness or between the testimony of different witnesses may or may not cause you to discredit that testimony. In considering the effect of a discrepancy, do not be misled by unimportant detail, but do consider all discrepancies that [2036] relate to matters of importance. Consider also whether a discrepancy resulted from an innocent error or an intentional falsehood.

Keep in mind that two individuals rarely, if ever, describe an incident precisely alike in all minute details. Note that one individual rarely, if ever, describes the same incident twice in the same minute detail.

In your daily life, you are constantly determining who is worthy of belief and who is not. In this case, employ the same tests in determining who is worthy of belief and who is not. Employ the same tests in determining the weight and credibility, if any, you will assign to the testimony of each witness who testified in this trial.

If you believe that witnesses have been discredited as to a part of their testimony, you may give the balance of their testimony such credence, if any, that you believe it deserves.

During this trial, various witnesses have been asked if consultation with counsel had occurred before the witness' appearance in court. It is not improper for an attorney to interview a witness before he or she testifies. It is a customary and accepted procedure. No possible suggestion of impropriety results from an interview alone.

In this case, you have heard testimony of witnesses who have rendered opinions. Persons who by education, training [2037] or experience have become experts in any art, science, profession or calling, may state their opinions in a matter in which they are experts and which is relevant to the case. They may also state the reasons for their opinion.

You should consider each expert opinion received in this case separately and give it such weight as you think it deserves. You may consider the education, training and experience of the expert witnesses when determining the weight of their opinions. You may reject the expert opinion in whole or in part if you conclude that the reasons given in support of the opinions are unsound.

questions have been asked in which expert witnesses were permitted to assume that certain facts were true and to give their opinions based on those assumptions. You must determine whether the assumed facts upon which the experts base their opinions are true. If any assumed fact was not established by the legal evidence, you must determine the effect of that fact not being established upon the value of the opinion of the expert.

As with other witnesses, however, you must decide what weight should be given the testimony of each expert. In determining its weight, you may take into consideration the experts witness' knowledge, experience, education, truthfulness and familiarity with the facts of the case, as well as other means of testing credibility and determining the weight to be [2038] given to the testimony. In short, you may use all those tests you ordinarily use in everyday life to determine whether an individual is well-informed regarding the matters he or she has talked about.

You will recall that during the trial expert witnesses were asked if they had been or will be compensated for their services. It is not improper for an expert witness

to be compensated for services. It is a customary and accepted procedure. No possible suggestion of impropriety results from compensation for the services of an expert witness, including compensation for giving testimony at trial.

A number of exhibits and testimony relating to them have been introduced. You will determine what weight, if any, the exhibits should receive in light of all the legal evidence.

During the trial in this case, certain testimony has been given by way of deposition. The testimony of a witness, who for some reason cannot be present to testify from the witness stand, may be presented in writing or by videotape under oath, in the form of a deposition. The testimony is entitled to the same consideration and is to be judged as to credibility and weighed, and otherwise considered by you in the same way as if the witness had been present, and had testified from the witness stand.

Summaries or charts prepared by a witness or a party and submitted to you in the jury room are received for the [2039] purpose of explaining facts disclosed by testimony and other documents which are legal evidence in the case. Such summaries or charts, however, are not in and of themselves proof of any facts. If such summaries or charts do not correctly reflect the facts or figures shown by the legal evidence in the case, you may disregard them entirely.

At law, a corporation is a person and must be regarded as such.

The acts of corporate officers and employees within the scope of their employment are the acts of that corporation.

Knowledge of corporate business received by an employee in the ordinary course of business is imputed to the corporation.

Article 1, Section 8 of the United States Constitution Congress was given the power to promote the progress of the useful arts by securing for limited times to inventors the exclusive right to their discoveries.

A patent office, now known as the Patent and Trademark Office, sometimes we refer to it as the PTO, and a system of issuing patents has existed ever since. Patents are granted as an incentive to inventors to develop and disclose to the public advancements in the useful arts.

An inventor is rewarded by a seventeen-year patent when he has made a patentable innovation. During the seventeen-year period, he has a right to prevent others from [2040] making, using or selling his invention. To protect those rights, he may invoke the power of the federal courts.

If the PTO acts favorably upon the inventor's application, it will issue a patent. The patent is divided into two parts. The first part being called the specification and the second part being called the claims. The scope or coverage of a patent is limited only to that which is contained in the claims section of the patent.

The claims of the patent define what the invention is and what others are precluded from making, using or selling.

Three elements requisite to an invention are novelty, utility, and non-obviousness.

To be "new" or "novel," as that word is used in the patent law, the invention must be one that was never before disclosed in a single prior process or a single prior patent or a single prior publication.

To have "utility," means an invention must have some usefulness. To be non-obvious, as that word is used in the patent law, the invention as a whole must not have been obvious to a person having ordinary skill in the pertinent

art at the time the invention was made, in view of the whole of the prior art.

Thus, new, non-obvious and useful things which add to the sum of useful knowledge are inventions which are patentable.

[2041] Another fundamental principle of American patent law is that a person is not entitled to a patent if he did not invent the subject matter claimed in the patent, therefore, the patent law provides that a person shall be entitled to a patent unless he did not himself invent the the subject matter sought to be patented. Being an inventor is a preliminary legal requirement for a valid patent.

The threshold question in determining inventorship is who conceived the invention. Unless a person contributes to the conception of the invention, he is not an inventor. An individual must contribute to the final conception of that which is covered by the claims of the subject patent in order to be considered an inventor. He how first brought the process to perfection and made it capable of useful operation is the inventor and is entitled to the patent. One who merely suggests an idea of a result to be accomplished, rather than means of accomplishing it, is not a joint inventor.

An inventor need not himself undertake all the steps necessary to reduce the invention to practice in order to be an inventor. An inventor made use the services, ideas and aid of others in perfecting his invention without losing his right to a patent. The work, experiments, and suggestions of others in carrying out the conception of an inventor, not rising to the level of invention, do not enentitle others to be treated as inventors or co-inventors. Also, the sole fact that someone [2042] other than the inventor was the first to observe an effect or useful property of the invention does not make that party an inventor or deprive the actual inventors of their rights.

Joint invention means collaboration of effort to produce a complete and operative invention. If more than one person contributed to what is claimed in the patent, all of these true inventors must apply together for the patent in their own names, and all of their names must appear on the issued patent in order for it to be valid.

The inventors as named in an issued patent are presumed to be correct. Misjoinder or non-joinder of inventors must be proved by clear and convincing legal evidence by the defendant.

The law of patents provides that a person is entitled to a patent unless before the applicant's invention thereof, the invention was made in this country by another who had not abandoned, suppressed or concealed it. To determine priority of invention, you must consider conception, reduction to practice, and corroboration.

Conception is the initial act of invention. It is the formation in the mind of the inventor of a definite and permanent idea of the complete and operative invention, as it is to be applied in practice. Conception must be proved by corroborating evidence which shows that the inventor disclosed to others his completed thought expressed in such clear terms [2043] to enable those skilled in the art to make the invention. The conception must have been of the invention defined in the claims.

Reduction to practice can be either actual reduction to practice or constructive reduction to practice. Actual reduction to practice occurs when the device is embodied in a physical form sufficient to demonstrate that it will work practically for its intended purpose. That is, actual reduction to practice requires that an invention be sufficiently tested to demonstrate that it will work for is intended purpose. There cannot be an actual reduction to practice of the invention wihout an actual physical embodiment which includes all limitations of the claims. Commercialization of the invention need not be demon-

strated for actual reduction to occur. Constructive reduction occurs on the date when the patent application is filed.

Finally, conception and reduction to practice must be corroborated or substantiated by evidence in addition to the inventor's own statements and documents.

You must consider all the facts of this case to determine whether there has been an abandonment, suppression or concealment. Public use of the invention, without disclosing the details of it, is sufficient to negate any intention to abandon, suppress or conceal. Engaging in activities designed to bring about public or commercial use of the invention is [2044] also sufficient.

Every patent issued by the United States Patent and Trademark Office is presumed to be valid as to each claim independently of the other claims. That presumption, however, is not absolute. You must also presume that a government agency, such as the United States Patent and Trademark Office, has properly done its job in examining the Hilton Davis patent until you are clearly convinced to the contrary.

In order to rebut such presumptions, defendant must establish by clear and convincing legal evidence the invalidity of each claim it asserts to be invalid. That burden of persuasion never switches from the patent challenger—never shifts from the patent challenger on this issue.

U.S. Patent No. 4,560,746 entitled "Ultrafiltration Process for Purification of Dyes Useful in Foodstuffs" issued on December 24 1985. The patent names as inventors: Robert W. Rebhahn and Wayne L. Cook. Application to the patent office for the Hilton Davis patent was originally made on March 28, 1983. A continuation-in-part application was filed on November 30, 1984.

The plaintiff in this action, Hilton Davis, is the owner of the patent. The defendant is Warner-Jenkinson company. Both Hilton Davis and Warner-Jenkinson manufacture FDA certifiable food dyes.

Plaintiff Hilton Davis contends that its patent [2045] number 4,560,746 is valid and leaves the burden of proving invalidity on Warner-Jenkinson. I have asked the parties to refer to the patent as the Hilton Davis patent for the purposes of this trial.

Hilton Davis also contends that Warner-Jenkinson has used manufacturing processes for making FD&C Red 40 and FD&C Yellow 6 food dyes which willfully infringe claims 1, 2, 3, 13, and 14 of the Hilton Davis patent.

Finally, Hilton Davis contends that Warner-Jenkinson is liable to it for its damages resulting from the unauthorized use of its patented food dye process.

Defendant Warner-Jenkinson contends that the Hilton Davis patent is invalid, and additionally, Warner-Jenkinson denies that the Warner-Jenkinson process for producing Red 40 and Yellow 6 infringes claims 1, 2, 3, 13 and 14 of the Hilton Davis patent because it uses different process conditions for ultrafiltering its dyes than those that are claimed by the plaintiff in the subject patent.

The claims of the patent define the limits of the invention. The claims of the patent must define the particular thing claimed to have been invented so that the public will know what the thing is and will, therefore, be able to avoid infringing upon the claims of the patent.

The function of a claim is to define the exact boundaries or limits of the claimed invention.

[2046] Neither the specification nor the drawings of a patent can be infringed. Only the patent claims can be invalid or infringed.

A patent may contain some claims which are valid and some claims which are invalid. A patent may also have some claims which are infringed and some claims which are not infringed. The only claims that you need to consider in this case are claims 1, 2, 3, 13 and 14 of the Hilton Davis patent.

Each of the claims of the patent is a separate definition of the invention. You should consider each claim on its own merits when evaluating both the issues of validity and infringement.

Each claim must be interpreted the same way both when considering its validity and when considering whether it is infringed.

In the Hilton Davis patent, claim 1 is known as an independent claim. All of the elements or steps required for the the process defined by the claim are written out in the claim itself.

The remaining claims in the Hilton Davis patent are known as dependent claims. Each of such dependent claims incorporates all of the elements or steps of claim 1 upon which it is dependent.

This means that the claims which are dependent on claim 1 are to be read just as if you were reading claim 1, [2047] then add into claim 1 the elements or steps recited in the dependent claims. Because if the dependent claims include all of the limitations in claim 1 from which they directly or indirectly depend, if you find that claim 1 from which the other claims depend is not infringed, then you must find that the remaining dependent claims, which are numbers 2, 3, 13 and 14, are likewise not infringed. You must determine if each of the independent and dependent claims is infringed.

The language of the Hilton Davis patent claims must be construed as it would be by those of ordinary skill in the art. In understanding the meaning of words used in the claims, you may consider the patent specification, the Prosecution history of the patent, other claims of the patent, testimony of expert witnesses, the circumstances surrounding the inception of the patent application and the meaning of words as contained in technical literature which are part of the legal evidence and the state—which are part of the legal evidence and the state of the prior art.

A patent granted by the Patent and Trademark Office is invalid if the claimed subject matter as a whole would have been obvious to a person of ordinary skill in the pertinent art at the time the patented invention was made. Patentability shall not be negatived by the manner in which the invention was made.

In determining obviousness of the claimed subject [2048] matter of each of the claims of the patent in suit, the following steps should be taken by you: One, you should determine the scope and content of the prior art relied upon against the patent in suit. Two, you should then identify the difference, if any, between each claim of the patent in suit and the prior art. And three, you should determine the level of ordinary skill in the pertinent art at the time the invention of the patent in suit was made.

You must make each of the determinations as to of the time the Hilton Davis invention was made.

You should consider such secondary considerations as commercial success, long-felt but unresolved need, failure of others to solve the problem and acquiescence in the patent by others.

The defendant Warner-Jenkinson must prove invalidity because of obviousness by clear and convincing legal evidence.

During the course of this trial you have heard the term "prior art" used frequently. One of Warner-Jenkinson's assertions in this case is that there were certain prior public disclosures which constitute prior art within the meaning of the law. The term "prior art" includes that which was: One, known or used by others in this country before the date of invention by inventor; or

Two, patented or described in a printed publication in this or a foreign country before the date of invention; or [2049] Three, patented or described in a printed publication in this or a foreign country for more than one year prior to the date of the application herein; or

Four, publicly used or on sale in this country more than one year prior to the date of the application therefor; or

Five, made or built by another person before the date of the invention where the thing made or built was not abandoned, suppressed or concealed.

The scope of prior art is defined as that reasonably pertinent to the particular problem with which the inventor was involved.

I previously instructed you that when the United States Patent Office grants a patent it is presumed that the patent examiner was correct. If a patent challenger contends that a patent is invalid but relies only upon the same prior art that the examiner considered in granting the patent, he asserts that the examiner was wrong, and the presumption requires that he prove this by clear and convincing legal evidence.

If the patent challenger relies only on prior art, which is not more pertinent or relevant than the art considered by the examiner, then such challenger must also prove invalidity by clear and convincing legal evidence.

If the patent challenger relies upon prior art which was not considered by the examiner, and which is more pertinent [2050] than that which was considered, then invalidity must still be proved by clear and convincing legal evidence, however, the patent challenger may have an easier time doing so.

In determining whether or not the claims of the patent in suit would have been obvious at the time, it is not necessary that there be absolute predictability of the result. It is only required that there be a reasonable probability the beneficial result will be achieved to show obviousness. In reaching your determination on the issue of obviousness, you should consider whether the subject matter of the invention was also developed independently by other persons either before the alleged inventors of the patent in suit or about the same time.

It is fundamental in patent law that one who applies a known process to a known chemical does not thereby invent an unobvious patentable process unless it produces a different or an unexpected result over the prior art. If you find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the process contained in the patent was an existing process, that plaintiff simply applied it to an existing chemical for ultrafiltration, and that the process failed to produce a different or unexpected result over the prior art, then you must find that the patented process is obvious and that the plaintiff's patent claims are invalid.

There have been frequent references to a person [2051] having ordinary skill in the art. Such a person is only hypothetical. It is that person who is presumed to be aware of all the pertinent prior art. The actual inventor's skill is irrelevant to the inquiry. A person of ordinary skill in the art is also presumed to be one who thinks along the line of conventional wisdom in the art.

To reach a proper conclusion, you must step backward in time and into the shoes worn by that hypothetical person when the invention was unknown and just before it was made. You must then determine, in light of all the legal evidence, whether the patent challenger has convincingly established that the claimed invention as a whole would have been obvious at the time to that hypothetical person.

You are also to determine the level of ordinary skill in the art to which the claimed invention pertains at the time the claimed invention was made. Factors to be considered in determining the level of ordinary skill in the pertinent art are: The educational level and years of experience of the person or persons who you find to have developed the processes that are the subject of this case and of others working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents, and publications of other persons or companies, and the sophistication of the technology.

One of the considerations of obviousness is the [2052] difference between the pertinent prior art and the claims of the Hilton Davis patent. You must consider the claimed invention as a whole.

The difference may seem slight, but it may also have been the key to success and advancement in the art resulting from the invention.

The specification of the patent must set forth the best mode contemplated by the inventor of carrying out his invention. The purpose of the best mode requirement is to restrain inventors from applying for a patent while at the same time concealing from the public preferred embodiments of their inventions which they have in fact conceived. Thus, the best mode inquiry focuses on the inventor's state of mind as of the time he filed his application. To prove that the best mode requirement was not satisfied, defendant must prove by clear and convincing legal evidence that the inventors knew of a better mode of carrying out the claimed invention than they disclosed in the specification of the patent, and, two, the inventors concealed, whether accidentally or intentionally, that better mode. What is required is an adequate disclosure of the best mode, not a guarantee that every aspect of the specification be precisely and universally reproducible. An inventor is not required to supply production specifications. Compliance with the best mode requirement exists when an inventor discloses his preferred embodiment. The fact that [2053] Hilton Davis may eventually have used a commercial process better than that disclosed in the patent is not pertinent to whether the specification disclosed the best mode contemplated by the inventor in carrying out his invention.

You must look at all the circumstances at the time the application was filed. Finally, each claim must be considered individually for compliance with the best mode requirement. A finding that the best mode has not been satisfied only affects those claims covering subject matter which has not been disclosed in compliance with the best mode requirement.

If patent statute provides that whoever, without authority from the patent owner, makes, uses or sells any patented invention within the United States during the term of the patent, infringes the patent.

Infringement is determined by comparing the accused process with the invention set forth in the claims of the patent. Two inquiries are involved: A determination of the scope of the claims, and, two, whether the claimed invention has been infringed.

Hilton Davis asserts that the Warner-Jenkinson process for making food dyes infringes the Hilton Davis patent under the doctrine of equivalents. The doctrine of equivalents exists to prevent a fraud on the patent.

The concept of the doctrine of equivalents is [2054] designed to protect the patent holder from an unscrupulous infringer who appropriates the invention but avoids the literal language of the claims. In this regard, consideration must be given for the purpose for which a step is used in the claims of the patent and in defendant's processes and the functions which they perform.

You may find infringement under the doctrine of equivalents when the accused process and the claimed invention perform substantially the same function in substantially the same way to yield substantially the same result even though the processes differ in name, form or shape.

Hilton Davis must prove infringement under the doctrine of equivalents by a preponderance of the legal evidence.

Though application of the doctrine of equivalents extends the protection of the patent beyond the literal words contained in the claims, it is not proper to erase the meaningful limitations of the claims on which the public is entitled to rely in avoiding infringement, and you must look to the claims section of the patent to determine the coverage and limitations of the patent.

The doctrine of prosecution history estoppel precludes a patent owner from obtaining a claim construction through the application of the doctrine of equivalents that would resurrect subject matter surrendered during prosecution [2055] of a patent application. That is not to say, however, that whenever a limiting amendment or argument is made during prosecution, the patent owner loses all coverage between what the claims literally cover and what they would have covered prior to the amendment or argument. A close examination must be made as to, not only what was surrendered, but also the reason for such a surrender. The fact that claims were narrowed does not always mean that a patent owner is completely prohibited from recapturing some of what was originally claimed. Depending on the nature and purpose of an amendment, it may have a limiting effect within a spectrum ranging from great to small to zero. Determintion of the effect on the doctrine of equivalents from actions taken before the PTO requires consideration of the nature of such actions, the reasons therefore, the prior art distinguished, and the examiner's objections thereby overcome.

A patent owner cannot obtain, under the doctrine of equivalents, coverage which could not have been obtained from the PTO by literal claims. In making this determination, you should consider whether the Hilton Davis patent claims as a whole, when interpreted to cover the Warner-Jenkinson's processes, "read on" the prior art.

If you find that Warner-Jenkinson's process infringes the Hilton Davis patent's claims, you must also decide whether or not plaintiff has proven by clear and [2056] convincing evidence that defendant's infringement was willful.

When a potential infringer has actual notice of another's patent rights, he has the duty to exercise due care to determine whether or not he is infringing.

There can be no willful infringement unless you find that plaintiff has proven that defendant knew or as a reasonable corporation should have known of plaintiff's patent and that defendant knew or as a reasonable corporation should have known that use of its process infringed plaintiff's patent claims.

Your decision concerning whether or not there is willful infringement must be based on the totality of the circumstances presented in this case. You may not find that any infringement was willful unless you find that plaintiff has proven that the defendant did not exercise due care to determine whether or not it was infringing the patent.

The duty of due care normally requires that a potential infringer obtain competent legal advice before infringing or continuing to infringe. The infringer must not only show an opinion from competent counsel but also that it had exercised reasonable and good faith adherence to the analysis and advice therein. The opinions of counsel must also be authoritative.

You should also consider whether defendant reasonably relied upon its counsel's opinion to determine [2057] whether defendant had a reasonable basis for believing that it had a right to use its process involved in this litigation.

You may consider that there was no willful infringement if you find that defendant has mounted a good faith and substantial challenge in this trial to the validity of the patent and to all claims of infringement. Since an invalid patent cannot be infringed, you should consider in your determination of willfulness, the reasonableness of the defenses raised by defendant in connection with any of the defendant's assertions that plaintiff's patent is invalid independent of defendant's assertion relating to its non-infringement of plaintiff's patent.

In assessing whether plaintiff has proven that the defendant willfully infringed the Hilton Davis patent, you must look to all the circumstances in determining whether the defendant conducted itself as a reasonable corporation would conduct itself under the same or similar circumstances.

If you find that the Hilton Davis patent remains valid and has been infringed by Warner-Jenkinson, you must then determine an amount of damages, if any, to which Hilton Davis has proven to you by a preponderance of the legal evidence it is entitled.

In general, a patent owner is entitled to damages that are adequate to compensation for the infringement, but in no event less than a reasonable royalty. Such damages [2058] represent compensation for the pecuniary loss suffered from the infringement without regard to the question whether the defendant has gained or lost by his unlawful acts.

There are two methods by which damages may be calculated: the profits the patent owner lost from the infringement, or, if lost profits cannot be ascertained, then a reasonable royalty must be determined.

The amount of the damages need not been proven with unerring precision. It is enough if the legal evidence shows the extent of the damages to a reasonable certainty as a matter of just ran reasonable inference, although the result be only approximate. When the amount of the damages cannot be ascertained with precision, any doubts regarding the amount must be resolved against the infringer.

A patent owner may recover lost profits by proving that, but for the infringement, the patent owner would have made the sales the infringer made, charged higher prices, or incurred lower expenses. The patent owner need not prove causation as an absolute certainty. Legal evidence showing a reasonable probability that the patent owner would have made the infringing sales the infringer made will suffice. The patent owner is not obligated to negate every possibility that a purchaser might not have bought the patent owner's product instead of the infringer's one, or might have foregone the purchase altogether.

[2059] To obtain as damages the profits on sales he would have made absent the infringement, that is, the sales made by the infringer, a patent owner must prove or may prove, one, demand for the patented product; two, absence of acceptable non infringing substitutes; three, his manufacturing and marketing capability to exploit the demand; and four, the amount of the profits he would have made. These elements, however, are not an absolute requirement in every case.

The factors to be considered in calculating lost profits, if any, include the amount or number of lost sales, the gross receipts the patent owner would obtain would have obtained from the lost sales had there been no infringement, the cost of sales to be deducted from gross receipts, and the patent owner's profit on the lost sales.

To be deemed acceptable, the alleged acceptable noninfringing substitute must not have a disparately higher price than or process characteristics significantly different from the product produced by the patented process.

As noted earlier, a reasonable royalty is to be awarded as damages only if the patent owner cannot establish its lost profits. The purposes of reasonable royalty is to set a floor below which the damages are not authorized to go. The objective of a reasonable royalty is to place the patent owner in at least as good a position as he would have been had the alleged infringer entered into a reasonable royalty agreement. [2060] A reasonable royalty is to be determined as of the date when the infringement, if any, began.

A reasonable royalty is an amount which a person, desiring to manufacture, use or sell a patented item or article, as a business proposition, would be willing to pay as a royalty and yet still be able to make and sell the patented article in the market at a reasonable profit. It is a hypothetical royalty resulting from arms length negotiations between two companies, although there is no actual willingness on either side to enter into a royalty agreement. An alleged infringer's failure to have made a profit from its alleged infringement and its willingness to pay a royalty are irrelevant.

You will have with you in the jury room the following special verdicts. No inference is to be drawn from the way I read the verdict forms and you must unanimously agree upon your verdict. And since we have already gone through them, I will not read them again to you. I have placed the verdict form in the front part of the notebook.

Nothing that I have said in these instructions and nothing in the manner in which the special verdicts have been prepared or explained to you is intended to suggest or convey in any way a result I think you should reach, as this is the exclusive duty and responsibility of the jury. I state to you categorically that the Court has no opinion as to the disputed [2061] facts of this case or the propriety of any verdict you must return.

I cannot embody all the law in any single part of these instructions. In considering one portion, you must consider it in the light of and in harmony with all the instructions.

I have instructed you on all the law necessary for your deliberations. Whether certain instructions are applicable may depend upon the conclusions you reach on the facts.

It is your duty, as jurors, to confer with one another, and to deliberate with a view to reaching an agreement, if you can do so without doing violence to your individual judgment. Each of you must decide the case for yourself, but do so only after an impartial consideration of all the legal evidence in the case with other jurors. In the course of your deliberations, do not hesitate to re-examine your own views and change your opinion if you are convinced it is erroneous.

Do not surrender your honest conclusion as to the weight or effect of the legal evidence, however, solely because of the opinion of other jurors or for the mere purpose of returning a verdict.

Remember always that you are not partisans. You are judges, impartial triers of the facts. Your sole interest is [2062] to ascertain the truth from the legal evidence in the case. Do not take a firm position at the outset and then be too proud to change your position if you become convinced that your position is wrong.

You must not be influenced by any consideration of sympathy or prejudice. It is your duty to carefully weigh the legal evidence, to decide all disputed questions of fact, to apply these instructions to your findings, and to render your verdict accordingly. In fulfilling your duty, your efforts must be to arrive at a just verdict. Consider the legal evidence and make your findings with intelligence and impartiality, and without bias, sympathy or prejudice, so that the litigants will feel that their case was fairly and impartially tried. If, during the course of the trial, I said or did anything which you consider an indication of my view on any disputed fact, you are instructed to disregard it, because only you, the jury, determine such matters.

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF OHIO

WESTERN DIVISION

C-1-91-218

If during your deliberations you wish to communicate with me, please put your communication in writing and give it to the Courtroom Clerk who will deliver it to me.

The Court will place into your possession the exhibits, the special verdicts and a copy of these instructions.

Upon retiring to the jury room, you will select one of your number to act as your foreperson. The foreperson will [2063] retain possession of these records and return them to the courtroom. The foreperson will see that your discussions are orderly and that each juror has the opportunity to discuss the case and to cast his or her vote. Otherwise, the authority of the foreperson is the same as any other juror.

Until your special verdict is announced in open court, you are not to disclose to anyone else the status of your deliberations or the nature of your verdict.

Now, ladies and gentlemen of the jury, is there anyone present on the panel that feels that they could not enter into deliberations in this matter and so far as you know not reach a fair and impartial verdict in this case, judgment in this case? I take it by your silence that there is no reason. If you'll excuse me just a minute.

v

HILTON DAVIS CHEMICAL Co.,

Plaintiff

[Filed Jun. 16, 1992]

WARNER-JENKINSON COMPANY, INC., Defendant

#### SPECIAL VERDICTS

1. We, the Jury, unanimously find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the following claims of the Hilton Davis patent are invalid because the differences between such claim and the pertinent prior art were such that the subject matter of the claim as a whole would have been obvious to a person having ordinary skill in the pertinent art at the time of the invention:

Claim 1 No (valid) X Yes (invalid)
Claim 2 No (valid) X Yes (invalid)
Claim 3 No (valid) X Yes (invalid)
Claim 13 No (valid) X Yes (invalid)
Claim 14 No (valid) X Yes (invalid)

2. We, the Jury, unanimously find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the following claims of the Hilton Davis patent are invalid because employees of Osmonics, rather than Drs. Robert W. J. Rebhahn and Wayne L. Cook, invented a portion or all of the claim:

Claim 1	No (valid) X	Yes (invalid)
Claim 2	No (valid) X	Yes (invalid)
Claim 3	No (valid) X	Yes (invalid)
Claim 13	No (valid) X	Yes (invalid)
Claim 14	No (valid) X	Yes (invalid)

3. We, the Jury, unanimously find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the following claims of the Hilton Davis patent are invalid because they apply an existing process to existing chemicals which does not produce a different or an unexpected result over the prior art:

Claim 1	No (valid) X	Yes (invalid)
Claim 2	No (valid) X	Yes (invalid)
Claim 3	No (valid) X	Yes (invalid)
Claim 13	No (valid) X	Yes (invalid)
Claim 14	No (valid) X	Yes (invalid)

4. We, the Jury, unanimously find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the following claims of the Hilton Davis patent are invalid because another person was not named as a coinventor to such claim:

Claim 1	No (valid) X	Yes (invalid)
Claim 2	No (valid) X	Yes (invalid)
Claim 3	No (valid) X	Yes (invalid)
Claim 13	No (valid) X	Yes (invalid)
Claim 14	No (valid) X	Yes (invalid)

5. We, the Jury, unanimously find that defendant Warner-Jenkinson has proved by clear and convincing legal evidence that the Hilton Davis patent is invalid because the inventors knew of and concealed a better mode of carrying out the invention than was set forth in the specification of the patent.

NO (valid) X YES (invalid)

6. We, the Jury, uninamously find that plaintiff Hilton Davis has proved by a preponderance of the legal evidence that defendant Warner-Jenkinson has infringed upon the following claims of the Hilton Davis patent:

Claim 1 Yes (infringed) X No (not infringed)

Claim 2 Yes (infringed) X No (not infringed)

Claim 3 Yes (infringed) X No (not infringed)

Claim 13 Yes (infringed) X No (not infringed)

Claim 14 Yes (infringed) X No (not infringed)

7. As to any claim found to be infringed in Special Verdict No. 6, We, the Jury, unanimously find that plaintiff Hilton Davis has proved by clear and convincing legal evidence that defendant Warner-Jenkinson acted willfully to infringe that claim of the patent:

Claim 1 Yes (willful) No (not willful) X
Claim 2 Yes (willful) No (not willful) X
Claim 3 Yes (willful) No (not willful) X
Claim 13 Yes (willful) No (not willful) X
Claim 14 Yes (willful) No (not willful) X

8. We, the Jury, unanimously find by a preponderance of the legal evidence that Hilton Davis has proved that the reasonable royalty for the use of the Hilton Davis patent by Warner-Jenkinson is:

## \$887,767.00

9. We, the Jury, unanimously find that plaintiff Hilton Davis has proved by a preponderance of the legal evidence that it lost profits as a result of the infringement of its patent by defendant Warner-Jenkinson in the amount of:

\$3,564,705.00

71

# and award to plaintiff Hilton Davis against the defendant Warner-Jenkinson damages in the sum of:

## \$3,564,705.00

[juror signature]	[juror signature]
[juror signature]	[juror signature]
[juror signature]	[juror signature]
[juror signature]	[juror signature]

Date 6/16/92

## [PATENT FILE]

## REGULAR UTILITY

#### 481038

Serial Number 06/481,038

Filing Date 03/28/83

Class 260

Subclass 208

Group Art Unit 124

Examiner Higel

Applicants

Robert W. J. Rebhahn, West Chester, OH; Wayne L. Cook, Cincinnati, OH.

Continuing Data Verified

Foreign/Pct Applications Verified

Foreign Filing License Granted 04/25/83

As Filed

State or Country OH

Sheets Drwgs. 0

Total Claims 13

Indep. Claims 1

Filing Fee Received \$300.00

Attorney's Docket No. 7364

#### Address

H. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

#### Title

Process for Purification of Azo Dyes Useful in Foodstuffs

This is to certify that annexed hereto is a true copy from the records of the United States Patent and Trademark Office of the File Wrapper and Contents of the file identified above.

By authority of the Commissioner of Patents and Trademarks

/s/

Certifying Officer

Dated Apr. 3, 1992

## [Application]

REGULAR UTILITY

ABANDON

481038

Serial Number 06/481,038

Filing Date 03/28/83

Class 260

Subclass 208

Group Art Unit 124

Examiner Higel

**Applicants** 

Robert W. J. Rebhahn, West Chester, OH; Wayne L. Cook, Cincinnati, OH.

Continuing Data Verified

Foreign/Pct Applications Verified

Foreign Filing License Granted 04/25/83

As Filed

State or Country OH

Sheets Drwgs. 0

Total Claims 13

Indep. Claims 1

Filing Fee Received \$300.00

Attorney's Docket No. 7364

#### Address

H. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

#### Title

Process for Purification of Azo Dyes Useful in Foodstuffs

# PROCESS FOR PURIFICATION OF AZO DYES USEFUL IN FOODSTUFFS

## BACKGROUND OF THE INVENTION

## (a) Field of the Invention

This invention relates to the field of purification, by ultrafiltration techniques, of dyes of the azo class useful in foodstuffs.

## (b) Information Disclosure Statement

Bollenback et al. U.S. Patent 3,249,444, patented May 3, 1966, describes an ultrafiltration process for increasing the tinctorial power of caramel color in which sugar, i.e. uncaramelized sugar, is separated from caramel color by ultrafiltration through a semi-permeable membrane which permits passage of small, uncolored molecules in solutions containing caramel color and rejects the passage of larger, polymeric caramel color molecules, thus enhancing the color of the concentrate. Preferred membranes for the process are made of vinyl plastics, and preferred pressures are in the range from 20 to 100 p.s.i.g.

Adams et al. U.S. Patent 3,544,455, patented December 1, 1970, discloses a process for the purification of itaconic acid by reverse osmosis through a semi-permeable membrane composed of cellulose acetate or polyamide in which itaconic acid and water are forced to the downstream side of the membrane, while inorganic salts, colored materials and organic materials remain on the upstream side. The process is carried out under a hydrostatic pressure of from 100 to 1,000 p.s.i.g. and at a pH in the range from 2 to 4.

The membranes used in the practice of the present process, manufactured by Osmonics, Inc. of Minnetonka,

Minnesota, and generally referred to as reverse osmosis/ultrafiltration membranes, are generally formulated of cellulose acetate, and in the process of the present invention, have a nominal pore diameter of 11 Angstroms. The filtration is carried out under a hydrostatic pressure of 200 to 400 p.s.i.g. applied to the upstream side of the membrane. By use of a mebrane having the appropriate critical pore size, the impurities, along with a large quantity of water, are thus forced through the membrane and accumulate on the downstream side as the permeate, while the desired product molecules are rejected by the membrane and remain on the upstream side of the membrane where the product becomes more and more concentrated as more and more water and impurities are forced to the downstream side.

In carrying out the present process, the reaction mixture as produced in the diazo coupling and as fed to the ultrafiltration unit, generally has a pH of around 9.0. While these solutions can be subjected successfully to ultrafiltration, it is preferred to adjust the pH to around 7.0 to 8.0 before passage through the ultrafiltration membrane.

## We claim:

1. In a process for the purification of an azo dye selected from the group consisting of the disodium salts of 1-[(6-methoxy-4-sulfo-3-methylphenyl)azo]-2-naphthol-6-sulfonic acid and 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid as the products resulting, respectively, from the diazotization of 5-methoxy-2-methyl sulfanilic acid or sulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting respective, 5-methoxy-4-sulfo-2-methylphenyldiazonium chloride or 4-sulfophenyldiazonium chloride with sodium 2-naphthol-6-sulfonate, said azo dye being present in the resulting reaction mixtures, along with impurities, the improvement which com-

prises: directly subjecting the reaction mixture resulting from said coupling to ultrafiltration through a membrane composed of cellulose acetate having a nominal pore diameter of 11 Angstroms under a hydrostatic pressure of from about 200 to 400 p.s.i.g. to thereby cause separation of said impurities from said azo dye, said impurities passing into the permeate on the downstream side of said membrane and said azo dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate, as evidenced by their essential absence in said permeate, recovering said azo dye, in greater than 90% purity and in a yield of around 98% of the total available color produced in said process, from said concentrate by evaporation of said concentrate to dryness.

- 2. A process according to Claim 1 wherein the concentration of the azo dye in said concentrate is maintained at around 25% (w/w) by recycling the concentrate and addition of water thereto.
- 3. A process according to Claim 1 wherein ultrafiltration is carried out until the concentration of the azo dye in the concentrate is maintained at around 5% (w/w).
- 4. A process according to Claim 2 wherein the pH of the reaction mixture is adjusted to 7.0 to 8.0 before ultrafiltration.
- 5. A process according to Claim 3 wherein the pH of the reaction mixture is adjusted to 7.0 to 8.0 before ultrafiltration.

### [Examiner's Rejection]

## UNITED STATES DEPARTMENT OF COMMERCE

Patent and Trademark Office

Address: Commissioner of Patents and Trademarks Washington, D.C. 20231

Serial Number 06-481-038

Filing Date 03/31/83

First Named Applicant Rebhahn

Attorney Docket No. 7364

H. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

Examiner Higel, F.

Art Unit 124

Paper Number

Date Mailed: 10-02-84

This is a communication from the examiner in charge of your application.

Commissioner of Patents and Trademarks

☐ Responsive to communication filed on \_\_\_\_\_

☐ This action is made final.

A shortened statutory period for response to this action is set to expire three month(s) from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

art	1	PART OF THIS ACTION:		
1.	$\boxtimes$	Notice of References Cited by Examiner, PTO-892.		
2.		Notice re Patent Drawing, PTO-948		
3.	$\boxtimes$	Notice of Art Cited by Applicant, PTO-1449		
4.		Notice of Informal Patent Application, Form PTO-152		
5.		Information on How to Effect Drawing Changes, PTO-1474		
6.				
Part	п	SUMMARY OF ACTION		
1.		Of the above, claims are withdrawn from consideration.		
2.		Claims have been cancelled.		
3.		Claims are allowed.		
4.	$\boxtimes$	Claims 1 to 13 are rejected.		
5.		Claims are objected to.		
6.		Claims are subject to restriction or election requirement.		
7.		This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.		
8.		Allowable subject matter having been indicated, formal drawings are required in response to this Office action.		
9.		The corrected or substitute drawings have been received on These drawings are		

		acceptable;
		not acceptable (see explanation).
10.	T 0	proposed drawing correction and/or the proposed additional or substitute sheet(s) of drawings, filed on has (have) been
		approved by the examiner.
		disapproved by the examiner (see explanation).
11.		ne proposed drawing correction, filed, as been
		approved.
		disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12.		cknowledgment is made of the claim for priority ider 35 U.S.C. 119. The certified copy has
		been received
		not been received
		been filed in parent application, serial no.
13.	fo tie th	ince this application appears to be in condition or allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle. 1935 C.D. 1; 453 O.G. 213.
14.		examiner's action

Serial No. 481038

Art Unit 124

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. Receipt is acknowledged of the information Disclosure Statement filed May 26, 1984, which has been entered in the file.

The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 to 11 are rejected under 35 U.S.C. 103 as being unpatentable over Booth et al, cited. The reference discloses the purification of azo dyes by ultrafiltration in high purity and yield. It would be obvious to purify azo dyestuffs by the method of the reference in the absence of any unobvious results.

Claims 12 and 13 are rejected under 35 U.S.C. 103 as being unpatentable over Colour Index, in view of Booth et al. The purified claimed compound or obvious variations thereof would be obvious from the compounds of Colour Index purified by the method of Booth et al, in the absence of any obvious or unexpected properties.

Bollenback et al, Adams et al, Teed et al, EPO, South African, Osmonics and Spatz I and II, cited by applicants, show the state of the art.

No claim is allowed.

Any inquiry concerning this communication should be directed to Floyd D. Higel at telephone number 703-557-3920.

/s/ Floyd D. Higel
FLOYD D. HIGEL
Primary Patent Examiner
Group Art Unit 124

FDHigel:cvm

A/C 703

557-3920

9/13/84

### U.S. Department of Commerce Patent and Trademark Office

NOTICE OF REFERENCES CITED

Serial No. 481,038

Group Art Unit 124

Attachment To Paper Number 3

Applicant(s) Robert W.J. Rebhahn et al

## U.S. PATENT DOCUMENTS

Document No. 4189380

Date 02-1980

Name Booth et al

Class 260

Subclass 144X

Filing Date If Appropriate

## FOREIGN PATENT DOCUMENTS

## OTHER REFERENCES

(Including Author, Title, Date, Pertinent Pages, Etc.)
Colour Index, 8rd Bd., Volume 4, page 4087
#15985 (1971)

Examiner

/s/ Floyd D. Higel Date 09/07/84

A copy of this reference is not being furnished with this office action.

(See Manual of Patent Examining Procedure, section 707.05(a).)

☐ The issue fee has not been received in Allowed

## [Notice of Abandonment]

## UNITED STATES DEPARTMENT OF COMMERCE

Patent and Trademark Office

Address: Commissioner of Patents and Trademarks Washington, D.C. 20231

Serial Number 06/481,038

Filing Date 03/31/83

First Named Applicant Rebhahn

Attorney Docket No. 7364

H. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

Examiner Higel, F

Art Unit 124

Paper Number 4

ance.

Date Mailed: 05/06/85

#### NOTICE OF ABANDONMENT

This application is abandoned in view of:

☐ The issue fee was received on

1.	$\boxtimes$	Applicant's failure to respond to the Office letter, mailed October 02, 1984.
2.		Applicant's letter of express abandonment which is in compliance with 37 C.F.R. 1.138.
3.		Applicant's failure to timely file the response received within the period set in the Office letter.
4.		Applicant's failure to pay the required issue fee within the statutory period of 3 months from the mailing date of of the Notice of Allow-

		Files Branch as of
		In accordance with 35 U.S.C. 151, and under the provisions of 37 C.F.R. 1.316(b), appli- cant(s) may petition the Commissioner to ac- cept the delayed payment of the issue fee if the delay in payment was unavoidable. The peti- tion must be accompanied by the issue fee, un- less it has been previously submitted, in the amount specified by 37 C.F.R. 1.17 (1), and a verified showing as to the causes of the delay.
		If applicant(s) never received the Notice of Allowance, a petition for a new Notice of Allowance and withdrawal of the holding of abandonment may be appropriate in view of Delgar Inc. v. Schuyler, 172 U.S.P.Q. 513.
5.		Applicant's failure to timely correct the drawings and/or submit new or substitute formal drawings by as required in the last Office action.
		☐ The corrected and/or substitute drawings were received on
5.	0	The reason(s) below.
		/s/ Floyd D. Higel

FLOYD D. HIGEL

Group Art Unit 124

Primary Patent Examiner

## [Continuation in Part Application]

Serial Number 677118 Patent Date Dec. 24, 1985 Patent Number 4560746 Serial Number 06/677,118 Filing Date 11/30/84 Class 260 Subclass 208 Group Art Unit 136 [124?] Examiner Higel APPLICANTS Robert W. J. Rebhahn, Berkeley, MA; Wayne L. Cook, Cincinnati, OH. Continuing Data Verified /s/ \_\_\_\_\_ This Appln is a CIP of 06/481,038 03/28/83, AB /s/ Higel AU124 Foreign/Pct Applications Verified Foreign Filing License Granted 12/26/84 Foreign priority claimed ☐ Yes ⊠ No 35 USC 119 conditions met ☐ Yes ⊠ No Verified and Acknowledged /s/ \_\_\_ Examiners Initials As filed State or Country NA Sheets Drwgs. 0 Total Claims 17

Indep. Claims 1
Filing Fee Received \$300.00
Attorney's Docket No. 73648

#### **ADDRESS**

B. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

#### TITLE

Ultrafiltration Process For Purification of Dyes useful In Foodstuffs

#### PARTS OF APPLICATION FILED SEPARATELY

#### PREPARED FOR ISSUE

/s/ D. Washington (Docket Clerk)

### AT ALLOWANCE

Sheets Drwgs None Figures Drwgs None Claims 17 Class 534 Subclass 840

> Examined and Passed for Issue Floyd D. Higel Primary Patent Examiner Group Art Unit 124

RETENTION LABEL 168

Estimates of printed pages Issue fee due (est.) \$500

Drawing(s)
Space(s)

Notice of allowance and issue fee due (est.)

Date mailed 6/26/85

Date paid 9-27-85

# PROCESS FOR PURIFICATION OF DYES USEFUL IN FOODSTUFFS

## RELATED APPLICATION

This is a continuation-in-part of our prior, copending application Serial No. 481,038, filed March 28, 1983, now abandoned.

The membranes used in the practice of the present process, and generally referred to as reverse osmosis/ ultrafiltration membranes, have a nominal pore diameter of 5-15 Angstroms, a preferred range being from 7-11 Angstroms. Membranes useful in the practice of the present invention are manufactured by Osmonics Inc. of Minnetonka, Minnesota or by the Celanese Corporation and are generally formulated of cellulose acetate, polyamide or polyvinylfluoride. The filtration is carried out under a hydrostatic pressure of approximately 200 to 400 p.s.i.g. applied to the upstream side of the membrane. By use of a membrane having the appropriate critical pore size, those impurities of a molecular size smaller than the nominal pore diameter of the membrane, along with a large quantity of water, are thus forced through the membrane and accumulate on the downstream side as the permeate, while the desired product molecules, as well as impurities of a molecular size larger than the nominal pore diameter of the membrane, are rejected by the membrane and remain on the upstream side thereof where the product becomes more and more concentrated as more and more water and impurities are forced to the downstream side.

In carrying out the present process the reaction mixture, as produced in the diazo coupling and as fed to the ultrafiltration unit, generally has a pH of approximately 9.0. While these solutions can be subjected successfully to ultrafiltration, it is preferred to adjust the pH to approximately 6.0 to 8.0 before passage through the ultrafiltration membrane.

We claim:

1. In a process for the purification of a dye selected from the group consisting of the disodium salt of 1-[(6-methoxy-4-sulfo-3-methylphenyl)azo]-2-naphthol-6-sulfonic acid, the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid, the trisodium salt of 1-[1-(4-sulfonaphthyl)azo]-2-naphthol-3,6-disulfonic the disodium salt of 2-[1-(4-sulfonaphthyl)azo]-1-naphthol-4-sulfonic acid and the sodium salt of 2-(2-quinolyl)-1,3-indanedione-sulfonic acid as the products resulting, respectively, from the diazotization of 5-methoxy-2-methylsulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 5-methoxy-4-sulfo-2-methylphenyldiazonium chloride with sodium 2-naphthol-6-sulfonate; the diazotization of sulfanilic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 4-sulfophenyldiazonium chloride with sodium 2naphthol-6-sulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with disodium 2-naphthol-3,6-disulfonate; the diazotization of 4-aminonaphthalene-1-sulfonic acid in water with sodium nitrite in the presence of hydrochloric acid followed by the coupling under alkaline conditions of the resulting 1-sulfonaphthyl-4-diazonium chloride with sodium 1-naphthol-4-sulfonate; and the condensation of 2-quinaldine with phthalic anhydride followed by sulfonation of the resulting 2-(2-quinolyl)-1,3-indanedione, said dye being present in the resulting reaction mixtures, along with impurities, the improvement which comprises: subjecting an aqueous solution of the reaction

mixture resulting from said coupling or said sulfonation to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g. at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing into the permeate on the downstream side of said membrane and said dye remaining in the concentrate, and when substantially all said impurities have been removed from said concentrate, as evidenced by their essential absence in said permeate, recovering said dye, in approximately 90% purity from said concentrate by evaporation of said concentrate to dryness.

- A process according to Claim 1 wherein said membrane is composed of cellulose acetate, polyamide or polyvinylfluoride.
- A process according to Claim 2 wherein the concentration of the dye in said concentrate is maintained at approximately 5-25% (w/w) by recycling the concentrate and adding water thereto.
- 4. A process according to Claim 2 wherein ultrafiltration is carried out until the concentration of the azo dye in the concentrate is maintained at approximately 5% (w/w).
- 5. A process according to Claim 3 wherein the pH of the reaction mixture is adjusted to 6.0 to 8.0 before ultrafiltration.
- 6. A process according to Claim 4 wherein the pH of the reaction mixture is adjusted to 6.0 to 8.0 before ultrafiltration.

## [Examiner's Rejection]

UNITED STATES DEPARTMENT OF COMMERCE Patent and Trademark Office

Address Commissioner of Patents and Trademarks Washington, DC 20231

Serial Number 06/677-118

Filing Date 11/30/84

First Named Applicant REBHAHN

Attorney Docket No.

B. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, NY 12144

Examiner HIGEL, F

Art Unit 124

Paper Number 3

Date Mailed: 02/14/85

This is a communication from the examiner in charge of your application.

## COMMISSIONER OF PATENTS AND TRADEMARKS

⊠ Thi	is application	has been exa	mined $\square$ I	Responsive to
	unication filed			
A shor	rtened statutor	y period for	response to	this action is
	expire THRE			
	ailure to respo			
cause	the applicatio	n to become	abandoned	. 35 U.S.C.
133				

# Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

 Notice of Reference Cited by Examiner, PTO-892.

2.	☐ Notice re Patent Drawing, PTO-948.
3.	□ Notice of Art Cited by Applicant, PTO-1449
4.	☐ Notice of Informal Patent Application, Form
	☐ Information on How to Effect Drawing Changes, PTO-1474
6.	
Part 1	II SUMMARY OF ACTION
1.	
Of sidera	the above, claims are withdrawn from con-
2.	☐ Claims have been cancelled.
3.	☐ Claims are allowed.
4.	⊠ Claims 1 to 17 are rejected.
5.	☐ Claims are objected to.
6.	☐ Claims are subject to restriction or election requirement.
7.	This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8.	Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9.	☐ The corrected or substitute drawings have been received on These drawings are ☐ acceptable; ☐ not acceptable (see explanation).
10.	☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on has (have) been ☐

<ul> <li>11. □ The proposed drawing correction, filed, has been □ approved. □ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW EFFECT DRAWING CHANGES", PTO-1474.</li> <li>12. □ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has □ been received □ not been received □ been filed in parent application, serial no, filed on</li> <li>13. □ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.</li> <li>14. □ Other</li> <li>EXAMINER'S ACTION</li> </ul>			approved by the examiner.   disapproved by the examiner (see explanation).
ity under 35 U.S.C. 119. The certified copy has □ been received □ not been received □ been filed in parent application, serial no, filed on  13. □ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.	11.		has been  approved.  disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW EFFECT DRAWING CHANGES",
for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.	12.		ity under 35 U.S.C. 119. The certified copy has □ been received □ not been received □ been filed in parent application, serial no.
	13.	0	for allowance except for formal matters, prosecu- tion as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D.
<b>EXAMINER'S ACTION</b>	14.		Other
			<b>EXAMINER'S ACTION</b>

Serial No. 677118

Art Unit 124

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Receipt is acknowledged of the information Disclosure Statement filed November 30, 1984, which has been entered in the file.

The following is a quotation of 35 USC 103 forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 to 17 are rejected under 35 USC 103 as being unpatentable over Booth et al, cited. The reference discloses the purification of azo dyes by ultrafiltration in high purity and yield. It would be obvious to purify azo dyestuffs by the method of the reference in the absence of any obvious results.

Claims 1 to 17 are rejected under 35 U.S.C. 103 as being unpatentable over Colour Index in view of Booth et al. It would be obvious to purify the compounds of

Colour Index by the method of Booth et al, in the absence of any obvious or unexpected results.

Bollenback et al, Adams et al, Teed et al, EPO, South Africa, Osmonics and Spatz I and II, cited by applicants, show the state of the art.

No claim is allowed.

Any inquiry concerning this communication should be directed to Floyd D. Higel at telephone number 703-557-3920.

/s/ Floyd D. Higel FLOYD D. HIGEL Primary Patent Examiner Group Art Unit 124

Higel:tgh

AC 703

557-3920

2-8-85

## [Examiner Interview Summary Record]

UNITED	STATES	DEPARTMENT	OF	COMMERCE
Patent and	Trade Of	fice		COMMITTERCE

Address: Commissioner of Patents and Trademarks Washington, D.C. 20231

Serial Number 677,118

Filing Date 11/30/84

First Named Applicant Robert W.J. Rebhahn

Attorney Docket No. 7364B

Examiner F D Higel

Art Unit 124

Paper Number 4

Date Mailed:

# **EXAMINER INTERVIEW SUMMARY RECORD**

All participants (applicant, applicant's representative, PTO personnel):

- (1) William G. Webb
- (2) Floyd D. Higel

(3)	
(4)	

Date of interview

Type: ☐ Telephonic ☒ Personal (copy is given to ☐ applicant ☒ applicant's representative).

Exhibit shown or demonstration conducted:

	Yes	×	No.	If	yes,	brief	description:	-	
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## Agreement

was	reached	with	respect	to	some	or	all	of	the
clair	ns in que	stion.						-	****

was not reached.

Claims discussed: 1 to 17

Identification of prior art discussed:

Booth and Colour Index.

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: Applicants' representative pointed out the 4 major differences between the claimed process and that of the Booth Patent. The examiner stated that if claim 1 were amended to contain the pH range of 6 to 9, the rejection on prior art would be overcome.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

Unless the paragraphs below have been checked to indicate to the contrary, A. FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (e.g., items 1-7 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

- ☐ It is not necessary for applicant to provide a separate record of the substance of the interview.
- ☐ Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this

completed form is considered to fulfill the response requirements of the last Office action.

/s/ Floyd D. Higel Examiner's Signature

# [Responsive Amendment]

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 124

Examiner: F. D. Higel

IN RE PATENT APPLICATION OF ROBERT W. J. REBHAHN et al.

Serial No. 677,118

Filed November 30, 1984

For: Process for Purification of Dyes Useful in Foodstuffs

# RESPONSIVE AMENDMENT

Hon. Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

In response to the Official Action mailed February 14, 1985, please amend the above-identified application as follows:

Change the title to read—ULTRAFILTRATION PROCESS FOR PURIFICATION OF DYES USEFUL IN FOODSTUFFS—.

# In the Specification:

Page 1, line 5, after "1983" and before the period, insert —, now abandoned —.

## In the Claims:

Claim 1, line 38, after "400 p.s.i.g.", insert —, at a pH from approximately 6.0 to 9.0, —.

#### REMARKS

The interview granted applicants' below-signed representative at the Patent and Trademark Office on May 9, 1985 by Examiner Higel is acknowledged. The foregoing amendments are believed to be in keeping with the understandings reached at the interview. It is believed that these amendments, taken together with the following remarks, will overcome all outstanding objections and rejections and place this application in condition for allowance.

The title has been amended herewith, in response to the Examiner's requirement, so as to be more specifically descriptive of the claimed invention.

The amendment in the specification at page 1, line 5 is made in order to provide the present status of parent application Serial No. 481,038.

The only other outstanding issues are the rejections of Claims 1-17, i.e. all the claims in the case, under 35 U.S.C. 103 as "being unpatentable over Booth et al. (U.S. Patent 4,189,380)" and as "being unpatentable over Colour Index in view of Booth et al.", the Colour Index reference being the citation in the Third Edition, Volume 4, at page 4087 of entry number 15985. These rejections are traversed for reasons which follow.

Booth discloses a process for purifying polymeric colorants by ultrafiltration through an appropriate semi-permeable membrane. The colorants purified by the process are dyes of the azo and anthraquinone classes, which are useful as non-absorbable colorants in edibles (column 2, lines 28-37). The dye chromophores are attached to a polymeric backbone, and the total polymeric molecules have a molecular weight greater than 1,000 Daltons. The Dalton is a unit of molecular weight used to express the molecular weights of extremely large molecules, such as polymers, one molecular weight unit being equal to 1.65 x 10<sup>-94</sup> Daltons. Therefore the minimum molecular weight

of the polymeric dyes purified by the Booth et al. process is:

1,000 Daltons
1.65 x 10<sup>-94</sup> Daltons/M.W. unit = 0.61 x 10<sup>-97</sup>

or 610 x 10<sup>34</sup>! In contrast, the dyes purified by the present process (in the form of their sodium salts) have molecular weights ranging from around 376 to 588:

FD and C Red 40	496.43
FD and C Yellow 6	451.37
Carmoisine	588.49
Amaranth	502.44
D and C Yellow 10	376.34

Thus the polymeric materials purified by the Booth et al. process have molecular weights differing from those purified by the process of the present invention by a factor of around 1 x 10<sup>24</sup>. Obviously the process parameters required in the Booth et al. process for purification of such extraordinarily large molecules would, by necessity, be vastly different from the parameters required to purify the relatively small dyestuffs which are purified in the present process. Thus it is not believed that the Booth process could be fairly urged to even remotely contemplate purification of the relatively small molecules purified in accordance with the instant invention.

Moreover, for reasons that are not given by the patentee, the Booth et al. process requires the addition of salts to the feed solution (i.e. the "retentate"):

"It is the essence of the present invention to maintain above a certain level the concentration of salt in the retentate resulting from the ultrafiltration purification of a polymeric dye solution during at least two diavolumes of ultrafiltration, preferably during 3 to 20 diavolumes and more preferably during from 4 to 15 diavolumes. This can be effected either by loading the initial feed with an amount of salt sufficient to maintain the required minimum salt level

throughout the diafiltration or, and this is generally preferred, by maintaining the salt concentration by adding salt with the diafiltration makeup solution. A combination of these two methods may be used as well." (Underlining added) (Column 3, lines 33-46)

The present process does not require such addition, and in fact the process conditions are intended to remove salts, as expeditiously and as completely as possible, so that the product can be obtained at a level of purity far exceeding regulatory purity requirements. (See the tables at pages 16, 17, 20, 21, 23, 24 and 25 of the present application for a comparison of the specifications obtained by the purification of various dyes in accordance with the instant process with the specifications required by the FDA.)

Moreover, it is noted that Booth et al. state that it is "often of advantage to add and/or maintain additional materials to/in the ultrafiltration feed" (column 4, lines 35-36), such additional materials, including pyridine (column 4, line 39) or a base, being added in order to maintain the pH above 9, and preferably from 11 to 13 (column 4, lines 49-51). And finally, the ultrafiltration in the Booth process is carried out at pressures from 25 to 200 p.s.i.g., preferably at 50-150 p.s.i.g. and more preferably at 75-125 p.s.i.g. (column 2, lines 42-44). The process of the present invention, in contrast, is carried out at much higher pressures, i.e. 200-400 p.s.i.g. (specification, page 10, lines 7-9 and page 10, line 35 to page 11, line 8), and at much lower pH's, i.e. approximately 9 but preferably 6.0 to 8.0 (specification, page 12, lines 31-37).

In summary, it is submitted that the only feature the claimed process has in common with the Booth process is that both processes relate to the ultrafiltration purification of colorants used in foodstuffs. Otherwise, the proc-

ess disclosed by Booth et al. is submitted to be so totally dissimilar, in all its critical parameters, to the present process that the Booth process is in no way suggestive of the present invention. Nevertheless, in order to further highlight the process parameters of the instant process, and in accordance with the understanding reached at the interview, the pH range of 6.0 to 9.0 has been inserted in Claim 1 at line 38. Support for this amendment is found in the specification at page 12, lines 31-37.

The further rejection of Claims 1-17 for alleged unpatentability over Colour Index in view of Booth et al. is not understood. The Colour Index entry, reference number 15985 relied on by the Examiner, depicts the compound of the formula:

identified as "C.I. Food Yellow 3", which chemically is the disodium salt of 1-[(4-sulfophenyl)azo]-2-naphthol-6-sulfonic acid and which is thus identical with F D and C Yellow 6 (specification, page 4, lines 26-30), one of the species within the ambit of the present invention. Applicants, of course, acknowledge that F D and C Yellow 6, and all of the other four foodstuff dyes purified by the present process, are well known in the art. However, the here-claimed process is not founded on the structural novelty, or even the structural unobviousness, of the dyestuffs which are so purified. Rather the patentability of

the instant process is submitted to rest on the novelty and the unobviousness of the process conditions, which are in no way taught or even suggested by Colour Index. The shortcomings in the Booth et al. reference have been discussed in detail above, and for reasons already given it is believed the present process is patentable over the combination of Colour Index with Booth et al.

The Examiner's attention is directed to several references which were not known to applicants at the time this application was filed and which may be pertinent to the question of patentability. Osei-Gyimah U.S.Patent 4,415,455 discloses semipermeable membranes and processes for their preparation for use in the desalination of water by ultrafiltration. The membranes operate by retaining salt species in the ultrafiltration feed water, and thus the retention properties of the membranes which are needed to remove small ionic salt species are vastly different from the properties needed to permit the passage of salt species, and other impurities, into the filtrate in the purification of dyestuffs as in the instant process.

Erzinger (assignor to Ciba-Geigy) U.S. Patent 4,452,608 addresses the problem of the separation of dyes into, and the resultant clogging of, the pores of an ultrafiltration semi-permeable membrane used in a process for the purification of dyes. The patentee overcomes the problem by adding a nonionic surfactant to the feed solution of the dye. The presence of surfactants, of course, would be undesirable in foodstuff dyes, and the Erzinger reference does not address the problems of the purification of such dyestuffs.

Horlacher et al. (assignors to Ciba-Geigy) U.S. Patent 4,466,900 discloses a process for preparing storage stable solutions of fluorescent brightener compositions by ultra-filtration of the brightener solutions through semi-permeable membranes containing ionizable groups. The membranes are typically made of cellulose acetate, polyacrylonitrile or copolymers of acrylonitrile and vinyl alcohol or vinyl

acetate (column 4, lines 2-6) and are modified in order to introduce the ionizable groups. The latter can be sulfato, sulfonic acid, sulfonic acid amide, carboxylic acid, carboxylic acid amide, hydroxyl, thiol, isocyanate or thioisocyanate, ammonium, phosphonium or sulfonium groups (column 4, lines 41-47). The rationale for the use of such ionizable groups on the ultrafiltration membrane for the purpose of obtaining storage stable aqueous solutions of the fluorescent brighteners is not given by the patentee, but in any case such groups are not essential to the purification of dyestuffs in accordance with the present invention, and the Horlacher process is not believed to be suggestive of the instant process.

The Bollenback et al., Adams et al., Teed et al., EPO, South Africa, Osmonics and Spatz I and II references, which the Examiner notes have been "cited by applicants, (and) show the state of the art" but not otherwise relied on are not believed to negate patentability of the subject invention.

This application is believed to be in condition for reconsideration and allowance, and such actions are respectfully solicited.

> Respectfully submitted, ROBERT W. J. REBHAHN et al.

By /s/ William G. Webb
WILLIAM G. WEBB
Their Agent
Registry No. 19,861
Telephone (518) 445-8294

WGW:dd

May 14, 1985

Address:
B. Woodrow Wyatt
Sterling-Winthrop Research Institute
Rensselaer, New York 12144

#### [Record of Interview]

# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 124

Examiner: F. D. Higel

IN RE PATENT APPLICATION OF ROBERT W. J. REBHAHN et al.

Serial No. 677,118 Filed November 30, 1984

For: Process for Purification of Dyes Useful in Foodstuffs

## RECORD OF INTERVIEW

Hon. Commissioner of Patents and Trademarks Washington, D.C. 20231

Sir:

This paper is not an amendment, nor is it intended to be responsive to the outstanding Official Action (Paper No. 3) mailed February 14, 1985. Rather it is only intended to make of record the substance of an interview at the Patent and Trademark Office on May 9, 1985 between applicants' below-signed representative and Examiner Higel.

Concerning the Examiner's requirement to provide a more clearly descriptive title, applicants' representative proposed changing the title to read—ULTRAFILTRATION PROCESS FOR PURIFICATION OF DYES USEFUL IN FOODSTUFFS—, which the Examiner stated would meet his objection.

The discussion then turned to a consideration of the rejections of all the claims under 35 U.S.C. 103 as being unpatentable over Booth et al. U.S.Patent 4,189,380 alone or in combination with Colour Index, Third Edition, Volume 4, page 4087, entry number 15985 (1971). As to Booth, applicants' representative pointed out four major points of difference between the ultrafiltration process disclosed by Booth and the process here-claimed, namely (1) the enormous differences between the molecular weights of the dyes purified by Booth (i.e. >1,000 Daltons) and those purified by the present process (i.e. molecular weights from 376 to 588); (2) the requirement in the Booth process to add salts to the retentate; (3) the very high pH ranges deliberately sought in the Booth process, i.e. above 9.0 and preferably 11 to 13 by addition of basic materials to the retentate, in contrast to the relatively low pH's used in the present process (i.e. from around 6 to around 9), as disclosed in the instant specification at page 12, lines 31-37; and (4) the rather low pressures used in the Booth process, i.e. 25-200 p.s.i.g., preferably 50-150 p.s.i.g. and more preferably 75-125 p.s.i.g., as disclosed at column 2, lines 40-46 of Booth in contrast with the higher pressures required by the present process (i.e. 200-400 p.s.i.g). The Examiner stated that, on presentation of such arguments, coupled with an amendment in Claim 1 inserting the pH range from 6 to 9, in accordance with the specification disclosure at page 12, lines 31-37, he would reconsider his rejection as based on Booth.

The rejection founded on Colour Index was apparently based on the Examiner's erroneous belief that certain dyes are being claimed in the instant application as products per se, and he readily agreed that the Colour Index reference would not support a rejection of the present claims directed to a purification process.

Applicants' representative handed the Examiner one copy each of U.S. Patents 4,415,455 (disclosing a process for ultrafiltration desalination of water); 4,452,608 (directed to overcoming the problem of the plugging of pores in membranes used in the ultrafiltration purification of dyes and the solution of the problem by the addition of a surfactant); and 4,466,900 (directed to the preparation of stable solutions of fluorescent dyes by ultrafiltration through membranes containing ionizable groups conjugated to the membrane). Applicants' representative indicated that he did not believe any of the references, alone or in combination, negated patentability of the present invention, but left the references with the Examiner for his own independent consideration.

Respectfully submitted, REBHAHN et al.

By /s/ William G. Webb WILLIAM G. WEBB Their Agent Registry No. 19,861 Telephone: (518) 445-8294

WGW:dd

May 14, 1985

Address:

B. Woodrow Wyatt Sterling-Winthrop Research Institute Rensselaer, New York 12144

## [Notice of Allowability]

UNITED STATES DEPARTMENT OF COMMERCE Patent and Trademark Office

Address: Commissioner of Patents and Trademarks Washington, D.C. 20231

Serial Number [677,118]

Filing Date [11/30/84]

First Named Applicant [Rebhahn, R.]

Paper Number 5

Date Mailed: [06/26/85]

# NOTICE OF ALLOWABILITY

## PART I

- 1. 

  This communication is responsive to applicants' amendment filed 05/17/85.
- 2. All the claims being allowable. PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
- 3. 

  The allowed claims are 1 to 17.

4.		The	drawings	filed	on		are	acceptable.
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5.	Acknowledgment is made of the claim for pri-
	ority under 35 U.S.C. 119. The certified copy
	has [_] been received. [_] received. [_] been
	filed in parent application Serial No, filed
	on

6.	Note the attached Examiner's Amendment.
7.	Note the attached Examiner Interview Summary Record, PTOL-413.
8.	Note the attached Examiner's Statement of Reasons for Allowance.
9.	Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10.	Note the attached INFORMATION DISCLO-

SURE CITATION, PTO-1449.

/s/ Floyd D. Higel
FLOYD D. HIGEL
Primary Patent Examiner
Group Art Unit 124

# DR. WAYNE COOK (DIRECT)

[192] Q. And then is it also a requirement of your patented process that the pH be such that it doesn't—or that it's compatible with the chemistry in the process itself?

A. Yes, that's right. And in the case of the lower limits, the issue there had to do with—well, we're going all the way back to the coupling reaction. As part of that reaction, sodium bicarbonate is generated as a byproduct. I think I mentioned that a few minutes ago when we were talking about salts that are present here, probably as most of you are aware if you get sodium bicarbonate, it can be a very acidic situation. It foams. And carbon dioxide gas comes up and foams all [193] over the place.

What we found is that if you lower the pH of the coupling solution much below about six, there is tremendous foaming problems in the plant. And then like having something small foam up or so in your home, here you've got several thousand gallons of stuff that's foaming up going all over the floor and going all over the plant, so that's an undesirable situation.

Q. In terms of whether or not the process will work to separate the dye from the impurities, does it make a difference what pH you operate at?

A. Not to my knowledge. I would qualify that and say you probably would not go much below the pH of about two. And then you start getting into material problems.

Q. That would be in the equipment itself?

A. Yes.

Q. Why don't you put something on there in terms of the result you're trying to achieve, that is, separate the dye from the impurities, what effect the pH has?

A. It just says the pH has minimal effect on dye purification.

[324] Q. All right. In the patented process in claim one, what's the purpose of the pH, generally?

[325] A. Generally speaking, the purpose of the pH is to maintain membrane stability and also to remain, more or less, in a neutral pH range for purposes of generating a, more or less, neutral product.

Q. Why do you want a, more or less, neutral product?

A. Because that's the product as specified by the FDA.

Q. Okay. Now when you say you want to maintain membrane stability by this pH, what do you mean?

A. For cellulose acetate membranes such as those used at the time that this invention was filed and recorded, those membranes are destroyed at certain pH's.

Q. All right, so you basically want to pick a pH that

doesn't destroy your membrane?

A. That is correct.

Q. Now, this particular range that you have given in the patent is approximately six to nine. What did you have in mind when you used the word "approximately"?

MR. TAFT: Your Honor, again, I'll object to that.

THE COURT: He may answer.

A. Well, certainly on the upper end of that range, we had an idea of how far we could go and still [326] retain the membrane integrity. On the lower end, the value of six was more a consequence of the process, and that we ended up there was not that particularly important that it be six.

Q. It was not particularly important?

A. No.

Q. All right. What pH is Warner-Jenkinson using in its process to make FD&C Red 40 dye?

A. At that particular stage in the process, my understanding is that their pH is about five.

Q. All right. And that would be-let me ask you this: At a pH of five, is Warner-Jenkinson performing

any function differently from the function that the pH's in the patent claim perform?

A. As far as the membrane separation process is con-

cerned, no.

Q. All right. And does the pH have any—is a pH of five or six, whether it's five or six, have any difference, would it make any difference in the way the membrane operates, given the particular type of membrane that Warner-Jenkinson is using?

A. No, none that I know of.

Q. One of the differences that Warner-Jenkinson says exists between their process and the patented process is that there is an impurity called triazine in [327] the reaction mixture. Are you familiar with what a triazine is?

A. Yes.

Q. Where does the triazine in this reaction mixture come from?

A. It's a reaction by-product of the diazonium salt with paracresidine sulfonic acid.

Q. So that would be one of the by-products that you described before?

A. Yes.

Q. Is that something that the FDA likes to see in the by-product?

A. No.

Q. Now, Warner-Jenkinson also claims, in this case, that the reason they operate at a pH of five is to get rid of the triazine. Can you explain to the jury why that is?

A. The triazine impurity is unstable under acidic pH conditions, and so by operating at a lower pH, you can—or at least a specific pH, you can destroy the triazine.

Q. All right. So, a pH of five would be an acidic pH?

A. Yes.

Q. And according to the chart you made [328] yesterday, anything from zero to seven—or from zero to less than seven would be acidic?

A. That is correct.

- Q. All right. Would a pH of six be considered acidic pH?
  - A. Yes, it would.
  - Q. Is triazine also destroyed at a pH of six?
  - A. Yes, it is.
- Q. Now, Dr. Cook, I would like you to turn in your exhibit book, if you would, please, to Exhibits 30—we'll start with Exhibit 30.

MR. TAFT: Pardon me, Your Honor. May I go back over and check the exhibit books?

Q. All right, what is Exhibit 30, Dr. Cook?

- A. Exhibit 30 is a copy of an article from the Journal of The Association of Official Analytical Chemists, Volume 67, Number four, 1984.
  - Q. All right. Who was this article written by?

A. Naomi Richfield Fratz, F-r-a-t-z.

Q. Who is that person with?

- A. The Food and Drug Administration, Division of Color Technology.
- Q. Is that the agency that's responsible for certifying food coloring?

A. That is correct.

[329] Q. Now, I would like you to look at Exhibit 31 and identify that for the jury, please.

- A. This is a copy of another article from the same journal, The Association of Official Analytical Chemists. The particular article is from Volume 59, number three, 1976.
  - Q. Who is this article written by?
  - A. D. Douglas Fratz, F-r-a-t-z.
  - Q. And who is he with?
- A. Also with the Division of Color Technology of the Food and Drug Administration.

Q. All right. What is Exhibit 32?

A. This is another article entitled—excuse me, I had to find the reference. This is another article from the Journal of The Association of Official Analytical Chemists, Volume 59, Number one, 1976.

- Q. Who wrote this article?
- A. John E. Bailey, B-a-i-l-e-y, and Elizabeth A. Cox, C-o-x.

Q. Who are they with?

A. The are also with the Division of Color Technology of the Food and Drug Administration.

Q. What is the conclusion reached in these three articles written by members of the Division of Color Technology of the Food and Drug Administration?

[330] A. The principal conclusion from these articles was that at pH's of around six, or acidic pH's, the triazine found in Red 40 decomposes.

Q. What do you mean, it decomposes?

- A. It reverts to impurities, including cresidine sulfonic acids.
  - Q. That was one of the starting materials?

A. That is correct.

- Q. So is there any difference, chemically, based upon your knowledge, as well as those articles from the Color Technology Division of the Food and Drug Administration, as far as the destruction of triazine is concerned, whether you operate at a pH of five, as in the Warner-Jenkinson process, or a pH of six, as in the patented process?
  - A. Not to my knowledge.

[333] Q. All right. Based upon the statement of Dr. Solter's letter of May, 1986, that they wish to recover dyes from the feed solution of various FD&C food dyes of pH's of five to eight, what conclusion can you draw from that about the criticality of the pH, as far as the dyes are going to be subject to the membrane separation are concerned?

A. Well, I would infer from this that there is no major difference between pH five and pH eight or in [334] between.

## DR. WAYNE COOK (CROSS)

[385] Q. Yes. Now, we have membrane as a selection and that was pore size, pressure, that was 200 to 400?

A. To the best of my recollection, yes.

Q. And pH six to nine and pore size five to 15.

A. No, I don't think that was the correct pH.

Q. What's the correct pH range?

A. When we talked about the membrane stability, we talked about the membranes being stable at pH range from two to eight, that was specified in the Osmonics literature, and they asked us to provide solutions that fell within that range.

Q. So you want to make this two to eight?

A. Well, that was the pH range that they asked us to provide the solution at something that fell within that range, so we would not destroy their membranes for that test.

[412] Q. So the membrane was selected by Osmonics, Osmonics told you what the pore size was; correct?

A. Well, the membranes were selected by Osmonics.

Q. Right. And then next we go to the 200 to 400 psig which is the pressure which was the Osmonics process; correct?

 A. Those are conditions that work for this process, yes.

Q. As specified, as recommended by Osmonics; correct?

[413] A. They were initially suggested by Osmonics, yes.

Q. And then the pH of 6 to 9, which for the most part falls in the pH range of 2 to 8 which was recommended by Osmonics; correct?

A. That's correct.

. . . .

## DR. RILEY KINMAN (DIRECT)

[489] Q. And what were you able to determine by reviewing that information?

A. The primary high pressure is higher than the Hilton Davis pressure. The intermediate pressure may or may not be very similar to the Hilton Davis primary pressure of 400 psi, pounds per square inch. The final pressure is usually in the range of 200 to 400 pounds per square inch pressure, which is in the Hilton Davis patent, is in the pressure range that they operate at.

Q. Why don't you pull up another board, if you would, and put those conclusions on it about what you determined the Warner-Jenkinson operating pressures to be?

A. Well, the primary pressure was usually around 500 plus or minus 20 or so. This is psi, pounds per square inch. The intermediate would vary as the process goes on, but, generally speaking, it is somewhere around 350 to 450 psi. And then the final would be less than 400 psi and it would be somewhere in the range of 200 to 400.

Q. All right. Let me put something up on the board. This is a claim chart, Plaintiff's Exhibit 7B, the second page of the claim. It calls for hydrostatic pressure of [490] approximately 200 to 400 psig. Based upon the review of Warner-Jenkinson's operating pressures, which pressures on which membranes lie within the range specified in the claim of the Hilton Davis patent?

A. Initially in their operating instructions they indicate that the pressure should be set at 500 plus or minus 20 psi. So this means the initial bank of membranes is seeing whatever that pressure setting was. Now, there were times in the operating log that it was down in the 400's, so the first bank of membranes is seeing that initial pressure.

Now, once you get inside the membrane modules, I can't say specifically which membrane is seeing exactly what pressure because this is both parallel and series op-

eration. So, the flow is moving all of the time through that bank of membranes on the concentrate side, because they are feeding back to the feed tank and so the pressure is downgrading from whatever that initial starting pressure is down to whatever that final pressure is that you read on the gauge. So a major portion of the membrane is actually receiving pressures in this 200 to 400 pounds per square inch gauge, the same as the claim in the patent.

[494] A. \* \* \* When we have a semipermeable membrane and we have water, this is H2O on both sides, if there is a difference in concentration of these ions—I'm showing chlorides or sulfates over here and no chlorides and sulfates over here—then mother nature will try, with this water, to equalize the concentration. In other words, water in this case would pass over to dilute out this concentration of ions. So that when equilibrium is obtained, in other words, steady states, mother nature is happy, the concentration is the same on both sides of this semi-permeable membrane.

Now, when the concentration is different, then there is what we call an osmotic pressure built up. In order to make that watering through there, you have to increase the pressure above osmotic pressure. And that's what we are doing in both the Hilton Davis process and in the Warner-Jenkinson process to prepare these dyes. We are putting sufficient pressure to overcome the osmotic pressure and push water through the [495] membrane plus impurities through the membrane with the water. In other words, not only can water flow through the membrane, but these ions can flow through that membrane also. In other words, these holes, passageways, if you will, are open to the fluid on the concentrate side and they are open to the fluid on the permeate side. And those ions can actually move back and forth through that water solution across that membrane, and we use the term it "transported" across the membrane.

Now, getting back to the actual process now. Since there will be an osmotic pressure caused by the dye and the various salts that are with the dye in the solution, and this combination of substances is greater than just clean water, which is on the permeate side, so there will be an osmotic pressure built up on this membrane and it will have some value. Now, that value will be a function of what's in here. In other words, you can't tell just by looking what the osmotic pressure is without making a measurement.

Now, the important thing is that this pressure, whatever it is, and let's just call it X, to make water flow through the membrane, we have to put a driving pressure using Warner-Jenkinson's term of primary pressure, if you will, that has to be greater than this X. Now, once you get the pressure greater than, greater than the X, water will move through the membrane and you would be able to see permeate flow indicated on your flow recording gauge, so many gallons per minute of [496] water permeate coming through the membrane.

- Q. Where would that permeate gauge be located in the Warner-Jenkinson system?
- A. The permeate flow would be coming out here.
- Q. Is that where the permeate gauge would be located?
  - A. Yes.
  - Q. Go ahead.
- A. Now, as I indicated to you early on, there is no reason for increasing the pressure greater than in achieving the osmotic pressure plus some driving force to push the permeate through the membrane and we try to keep that pressure as low as possible.

Now, let me give you an illustration. In the early days of membrane work, we were trying to use membranes for desalting sea water and because of the high concentration of salts in sea water, the pressure required to make clean water from sea water or desalt it was 15,000 psi, pounds per square inch. And this is very high pressure.

And it required a very high pressure pump and it required very high pressure valves and fittings, and all of these things.

Now, with the new membranes, we are able to use low pressure, which is a much less demand as required for energy. So we are down in the operating range of these two companies' processes of the 200 to 400 pounds per square inch, and this has been one reason why the ultrafiltration RO process has been [497] more widely used now. We are able to get those pressures down in a more reasonable range.

Q. Is there any difference in the way that the membrane and the Warner-Jenkinson process is functioning at the pressures it is seeing in comparison to the way that the membrane in the claims of the Hilton Davis patent is operating under a pressure of 200 to 400 psi?

A. It is doing essentially the same thing.

Q. Explain what it's doing and how it is doing it.

A. Essentially, and let's use this side as being the pressure side, we are putting a pressure greater than osmotic and by doing that we are pushing water plus impurities through the membrane and we are achieving the desired result of a purification of the dye solution. This is water plus dye and a removal of impurities from this water plus dye solution and, of course, a concentration, then, of the final end product.

Q. Is that result being achieved in both the Warner-Jenkinson process and in the process that's described in the claims of the patent?

A. Yes.

Q. Now, are you aware in this case of any different results that Warner-Jenkinson is claiming it achieves with its process which compared to the results achieved with the process in the patent as far as the pressure is concerned?

A. Well, they indicate some reason that they are using [498] the higher pressures, but I do not see any basic difference in the process.

Q. Is one of the reasons they indicate that they get less dye loss?

A. Yes.

Q. And what has your investigation shown, if anying, as to whether or not Warner-Jenkinson is achieving less dye loss at their higher pressures than Hilton Davis achieves?

A. I do not see any real change in the dye loss between the two processes.

Q. Could you expand on that, explain that a little bit more?

A. Weil-

Q. What exactly did you look at that to come to that conclusion?

A. I looked at their process out there, and at the higher pressures they appeared to be losing more of their dye solution around the pump packing and casing and so forth. Then, in looking at the actual processing sheets, the actual concentrations of impurities, and the conductivities and so forth on the final solution are equivalent to the Hilton Davis final solution.

\* \* \* \*

[512] Q. One other requirement in this claim is that the process operate at a pH approximately 6 to 9. While you were at Warner-Jenkinson and inspecting their process equipment, did you observe any instruments on their dye processing equipment which were used to record pH?

A. Yes.

Q. What did you observe?

A. Well, I observed on the Red Dye 40 Osmonics unit that was treating the dye pH of 6.

Q. How did you observe that?

A. By reading the strip chart recorder that they had on the unit.

Q. What's a strip chart recorder?

A. A strip chart recorder is a roll of paper that has points indicated. In this case, we are measuring pH and there is an actual line drawn at the particular number

that we talked about here. In this case, it was a pH of 6, and there is a continuous line on there over time as to what the pH is. If the pH changes, the needle would move up and down on that chart. But I did observe the pH of 6 that day when we were there.

## DR. RILEY KINMAN (CROSS)

[520] Q. Now, I believe you just told these folks that, with regard to the pH of 6, that you observed all of our machines and you observed on one of them on the pressure scale that it says a pH of 6. Didn't you tell these people that?

A. I observed it on the Red Dye 40 machine that there was a pH of 6, yes.

Q. But what you didn't tell these people is that that machine was not running at the time, was it?

A. The machine that I observed was running.

Q. I'm talking about the one with the pH of 6. Are you saying that machine was running at the time?

A. There were four different machines that we observed, and, as I recall, three out of the four were running.

Q. And one was shut down for cleaning, wasn't it?

A. Could have been.

Q. And that was the one, wasn't it?

A. Could have been.

## DR. RILEY KINMAN (REDIRECT)

[552] Q. At any of those upstream sides of the membrane, did you find the pressure to be actually within the range of 200 to 400?

A. Yes.

\* \* \* \*

### DR. ROBERT KESTING (DIRECT)

[753] Q. Can you tell the jury generally what the pH scale is and what it means?

A. Yes, I can. I would just like to preface this by saying people in general, and scientists in particular, like to work with small numbers. Just easier to grasp, easier to remember, easier to understand. So they will convert complicated numbers into small, frequently whole numbers. And that's what was done in the case of, for example, the Richter scale for earthquake damage or earthquake magnitude, and rather than speak of numbers like a thousand and ten thousand and a hundred thousand, they speak of Richter scale, for example, of typically between 1 and, say, 9. And those units differ from one another in magnitude. In other words, going from 1 to 2 was not a small step. It's a large step. It's a ten-fold increase in magnitude as shown on the seismograph scales. It [754] can be actually a 31-fold increase in the energy that's involved in each step.

In other words, an earthquake with a Richter scale number of 7 is not simply somewhat removed from an earthquake of 8. There is big difference in there. It is a ten-fold difference in magnitude and a 31-fold difference in the energy. So it is easier to talk about 8 than to say 230. And that's the reason why they use these scales that go back to some of the fundamentals and much easier to talk about.

Same was done in the case of pH. pH is a way of describing the hydrogen ion concentration and the actual definition of—it is the law of the reciprocal. That's one over that particular hydrogen ion concentration expressed in moles per liter. So if you have one over ten to the minus two, that's a hundredth of a mole of hydrogen ions per liter. That would be a pH of 2. The difference between a pH of 2 and a pH of 3 is considerable. The pH of 2 is ten-fold higher concentration of hydrogen ions than a pH of 3. And so I'm just going through that to show you that these numbers, although they sound like they are

close together, they are not that close together in terms of actual concentrations. So I want you to be aware that the difference of somebody operating in a pH of 5 can be quite different than somebody operating in a pH of 6.

Q. Let's try and simplify this, and let me just use the [755] back of this board here. If we take the chart here, and we are going to have pH of 7 here, which is neutral. And then 6 and 5 and 4, and then you'll go 8, 9 in the other direction?

A. Yes.

Q. What are we going to put on this side?

A. That would be the hydrogen ion concentration.

Q. Could acidity be another term?

A. I would just be H plus, in parentheses, or in brackets.

- Q. So now if we go down from 7 to 6, you say that's ten-fold?
  - A. Ten-fold increase in hydrogen ion concentration.

Q. That would be ten.

A. Right.

Q. But if we go down from 6 to 5, what happens?

A. Well, starting comparing that to 7, you would have another, it would be 100.

Q. So that would be 100-fold difference.

A. And you go in the other direction, you are going down, pH of 8 would be one hundredth.

## DR. ROBERT KESTING (CROSS)

[851] Q. I changed it. Warner-Jenkinson is running their process and it's running making this dye at a pH of 5. And I come up with a big bucket of something. And I dump that bucket of something into their vat and the pH goes up to 6. Does the machine quit?

A. No.

Q. Does it quit making the red dye, does the red dye quit coming out?

A. No.

Q. Let's turn it around. Let's go over to Hilton Davis. Go up to their machine. They are making red dye and yellow dye at a pH, say between 6 and 9. And now I take a big bucket of acid and I dump it in there and pH goes down to 5. Does the Hilton Davis process quit?

[852] A. I wouldn't imagine so.

## JAMES NOONAN (DIRECT)

[888] Q. Now, let me ask you, before you go into talking about that, where was Warner-Jenkinson in October 1986 when you first learned about this patent, where was Warner-Jenkinson in terms of its progress in its own ultrafiltration processes of Red 40 and Yellow 6 dyes?

A. We had behind us about four years of doing research into the process, and, in fact, we started, in about in 1982, we started researching the ultrafiltration process and had made a lot of progress. We already had the process pretty much worked out. We had some of the final touches to make and had worked already with a good number of the colors that we were selling and had actually produced as much as five thousand pounds of one of the colors that produced it using the ultrafiltration process that we had developed.

Q. And at the time that you came across this patent, what was left to do to totally convert over all of your manufacturing at that time to finish that, what was left to do?

A. Principally, it was ordering the equipment. We had rented equipment from three different suppliers of this equipment and we had done a lot of work with each —with all of the equipment, and we were at the point where—and it was all rented equipment up to that point. And we were just about ready to make the decision as to which of the products—the [889] equipment that we would purchase.

- Q. You mentioned that when you found the patent you contacted your outside patent counsel, correct?
  - A. That's correct.
  - Q. And who was that or is that?
  - A. Mr. Donald Leavitt.
- Q. And would you just tell us what you did and what happened then with patent counsel? Did you send the patent to him?
  - A. Pardon?
  - Q. Did you send the patent to him?
- A. Yes, we did. We immediately obtained the patent and immediately contacted Mr. Leavitt, with whom we had worked for many, many years. He served our company in this area a long time. We had a lot of faith in him. He had a very good reputation. And so we immediately contacted Mr. Leavitt and he started the work that he had to do to get the information, get the patent file, so that he could familiarize himself with the situation so that we could see what action we were going to take.
  - Q. And what happened next?
- A. Well, after we obtained the—after Mr. Leavitt obtained the history of the patent negotiations, we met and discussed what was the appropriate action for us to take based on his evaluation of what had been considered by the patent [890] office.
- Q. Now, let me just stop you for a minute. Before you tell us about that meeting, would you take a look, please, at Defendant's Exhibit 589?
  - A. What number was that?
- Q. 589, please. I just want to run through some of these exhibits as we go along just so we have into evidence to document what you did. Do you have that in front of you, 589?
  - A. Yes.
- Q. Is that the letter that you sent to Mr. Leavitt, your outside counsel, sending a copy of the patent?
  - A. Yes.

- Q. And that's dated November 6, 1986?
- A. That's correct.
- Q. Now, let me ask you this. Why did you send the patent to outside counsel? Why did you contact outside counsel? It might be obvious, but tell us why.
- A. Well, it was very important because we were—we had done an awful lot of work in this area, as I have mentioned, over a four-year period. I don't know that we were necessarily considering patent in the process. We had done a lot of work on it, but a lot of it seemed to us to be just prior art, and so we felt that we should take a close look at this and see just exactly what our next step would be.
- Q. So you sent the letter to the lawyer, you got some [891] other information for your counsel, Mr. Leavitt, and then I believe you said you had a meeting?
  - A. Yes.
  - Q. When was that?
- A. We met on January 19, 1987, and in this meeting we had myself and some of our technical people who were involved in it, Dr. Solter and Dr. Bischoff.
  - Q. And Dr. Solter is sitting here at counsel table?
  - A. Yes, he is.
- Q. And Mr. Leavitt, your patent counsel, is sitting back there in the pew to the right?
  - A. That's correct.
  - Q. So what happened at that meeting?
- A. We discussed the patent, of course, and discussed what we had done in this area and we came to the conclusion that we felt that we were not infringing.

### (Pause in proceedings.)

- Q. What did you—you were starting to say that we discussed it and we came to the conclusion. Go ahead.
- A. And that we came to the concluison that what we were doing was the process that we had almost completely developed, we weren't quite finished with it yet, but it wasn't infringing on the patent.

Q. And why was that?

A. Because we were operating under a considerably [892] different operative method.

Q. Are you talking about your operating pressures up in the upper 400s, lower 500s?

A. That's correct.

Q. And your pH down at 5?

A. That's correct.

Q. And what was the advice to you at that time from your patent counsel, Mr. Leavitt, sitting back there?

A. Our advice was—his advice was to continue what we were doing and to keep him informed and that to just finish up on our process and then we would discuss the situation.

Q. Did he tell you about anything about your purchase of equipment and when you should get back to him for a formal written opinion?

A. Well, that was when we got to the point where we were at that stage that we certainly should get his opinion at that point in time. Yes, that was kind of certainly mutually understood, because we were not interested in just blatantly violating a patent.

Q. Now, I believe you have told us so far that he told you that the way you did your own process you didn't infringe, correct?

A. That's correct.

Q. Did he tell you anything about what he thought about the validity of the patent in the first place?

[893] A. Yes, he considered that the patent was not valid.

[902] Q. And did he, in fact, give you a formal opinion letter?

A. Yes. On October 12 he submitted to us a formal opinion letter.

Q. And without reading that whole letter, did he tell you that as long as you operated above 450 and at a pH of 5.5 or below you wouldn't infringe that patent?

A. That's right. In addition to that, he felt that the patent was really not valid, which was a very important

input.

Q. But you wanted to avoid all this anyway, so you wanted to also—you didn't want to infringe it if you didn't have to?

A. That's correct.

## JAMES NOONAN (CROSS)

[905] Q. Mr. Noonan, you testified a few moments ago that when you first learned about the Hilton Davis patent you were immediately concerned; that was your testimony, wasn't it?

A. Yes.

Q. And the reason that you were concerned, sir, was because Warner-Jenkinson had been working on the same sort of a project, correct?

A. Yes, that's correct.

Q. In fact, sir, your concern was specifically that there had been a patent issued on a process that Warner-Jenkinson had been working on, isn't that correct?

A. Yes, in general.

Q. But when you learned about the patent, you didn't [906] stop using the process, did you?

A. No, we didn't.

Q. In fact, at the time that you learned about the patent in October of 1986, Warner-Jenkinson was already making Red 40 in full batch loads and selling it, weren't you?

A. That's correct.

Q. And you said in your testimony that you were making—that you made about five thousand pounds up to that point, but, Mr. Noonan, I'd like to direct your attention to Plaintiff's Exhibit 90, which is a listing of

how much Red 40 Warner-Jenkinson actually made in 1986, and that was ten thousand pounds. Are you aware of that?

- A. No. I had not seen these figures before.
- Q. And in 1987 Warner-Jenkinson actually made 95,756 pounds?
  - A. In 1987?
  - Q. In 1987. Are you aware of that?
  - A. I'm not aware of all these figures.
- Q. And during all this period of time, all the way up until October 12, 1987, a year after you first learned of the work of the Hilton Davis patent, you didn't have any opinions from your counsel at all, did you?
- A. Yes, we did. We had an unofficial verbal opinion in our January meeting in 1987.

[915] Q. And it is a fact, is it not, that from October 1986, when you first found out about the Hilton Davis patent, until October of 1987, you did not have a written opinion from Mr. Leavitt?

A. That's correct.

## DONALD LEAVITT (DIRECT)

[924] A. Yes. I have represented Warner-Jenkinson for over 25 years and in that connection have become familiar with the color industry and the dye industry.

Q. Let me ask you, Mr. Leavitt, when did you become a patent lawyer?

- A. I was admitted to the bar in Illinois in Missouri in 1952 and became registered to practice before the United States [925] Patent and Trademark Office, I believe, in 1953.
- Q. And have you been in like a law firm type private practice before the patent office, ever since then?
  - A. Yes, I have been in private practice since 1952.

Q. As a patent lawyer?

A. As a patent lawyer with the firm I am with now, yes, for 40 years.

Q. When did you first become aware of this patent?

- A. I first became aware of the Hilton Davis patent in November 1986.
  - Q. Now, how was that patent transmitted to you?
- A. Mr. Noonan, the then president of Warner-Jenkinson, wrote to me on November the 6th, 1986 and transmitted a copy of the Hilton Davis patent. He had previously discussed this with [926] me over the telephone and this letter supplemented our telephone discussion, and he sent me a copy of the patent, which is the first time I ever saw the patent.
- [927] A. After I received Mr. Noonan's letter, I reviewed the patent itself to make certain that I had an understanding of what was described and claimed in the patent. I called Mr. Noonan on the 21st, I believe, of November, 1986, and told him that I had reviewed the patent and I suggested that we order a copy of the file history of the patent. That's a copy of the proceedings between the applicant and the patent office resulting in the issuance of the patent. I thereupon ordered a copy of the file history from my office on November 21, 1986. I don't have a record of when that was received by our office.
- [928] Q. When you say a copy of the patent file, you mean you wrote to the patent office and you actually obtained the whole file from the patent office, not just the patent?
  - A. That's correct.
- Q. Go ahead. You were saying you couldn't tell from your file or you don't have a letter telling exactly when you received it?
- A. That was received probably sometime in December or January. I then reviewed the file history from begin-

ning to end to make certain that I was familiar with the entire proceeding of the application before it matured into the issued patent. We then arranged to meet with Mr. Noonan and others at Warner-Jenkinson on January 19, 1987. At that time, I completed—

Q. Pardon me one minute. I'm sorry. I shouldn't

have interrupted. Go ahead.

A. At that time, I had completed my study of the patent itself and my study of the file history and all of the references that were cited in the prosecution of the patent application before the patent office. I met with Mr. Noonan, Dr. Solter, and Mr. Bischoff of Warner-Jenkinson on January 19, 1987.

\* \* \* \*

[929] A. At that meeting I was advised that Warner-Jenkinson had been working themselves on an ultrafiltration process since 1982. I was further advised that they had already been making pilot plant quantities of certain food colors by ultrafiltration, namely, FD&C Red 40, FD&C Blue 1, FD&C Red 3, FD&C Green 3, and I believe others. I was advised that, in the course of their own work and their work with the suppliers, the suppliers being Osmonics, Carre, and Niro, the three that I remember, that they had used various conditions, but at that point in time had settled on using pressures in excess of 450 pounds per square inch on up to pressures of 525 pounds per square inch. They also informed me that they were using pHs below 5.5, all the way down to 5.

[930] During that discussion, based on my study of the patent and the file history, I advised Warner-Jenkinson at that meeting that, using those conditions, they were not infringing the Hilton Davis patent because those conditions were outside of the scope of the claims of the patent.

I further advised them, I believe, that there was not infringement either on a literal basis, or under the so-called doctrine of equivalents. They told me that they were continuing to work on this and had not settled yet on the particular equipment that they would purchase for use on a commercial scale, but that they were continuing

their work and that it was likely that sometime during 1987 that decision would be made.

I suggested that when they did make the final decision, that they should inform me and then tell me what the exact operating conditions were, the exact process parameters, so that I could then render a formal written opinion on the matter based on what they were going to do commercially, not based on what they were experimenting with. And I left with the idea that they would keep me informed, and when they arrived at the point where the commercial equipment was settled upon and the process conditions to be used commercially were settled on, they would let me know and I would then render a formal written opinion.

Q. Now, you mentioned that you advised them that they [931] did not infringe the patent. Would you describe to these folks why, as of that meeting, January 1987, you had determined as patent counsel that what Warner-Jenkinson was doing would not infringe upon

those claims in that patent?

A. The claims of the patent themselves are limited to an ultrafiltration process operated at hydrostatic pressure of 200 to 400 pounds per square inch. Also limited to operating at a pH of 6 to 9. The file history of the prosecution of the application, which resulted in the issuance of the patent, shows that the allowance of the claims by the examiner was predicated on the limitation in the claims to that pH range of 6 to 9 and the argument presented by the applicant's agent or attorney that the pressure range of 200 to 400 distinguished over the Booth et al. patent, which you have heard about in this courtroom.

Indeed, in one part of the file history, it was emphasized that the novel and unobvious features of the Hilton Davis invention rest on the process conditions, referring to the particular pH range that I have mentioned and the particular pressure range that I have mentioned.

Taking all that into account, we, first of all, note that a pressure of 450 up to 525 is clearly outside the range

of 200 to 400. A pH of 5.5 down to 5 is clearly outside the range of 6 to 9. Moreover, under the so-called doctrine of equivalents, we have to take into account, a patent lawyer has [932] to take into account another doctrine, the doctrine of wrapper estoppel. Under that doctrine, if an applicant argues—

\* \* \* \*

- [933] Q. Rather than refer to the specific legal terms of doctrine of equivalents or doctrine of wrapper estoppel, rather than actually referring to those, what we would ask you to do is to talk about what you saw in the file and what they argued to the patent examiner and why that influence, how that is that that affects your opinion. Can you do that? I think where you were was you were talking about—you were talking about estoppel. If you would just pick up there and explain.
- A. Well, having obtained the allowance of claims, only after amending the claims to insert the pH range of 6 to 9, and only after arguing that the pressure range of 200 to 400 is, quote, "much higher than the Booth range of 25 to 200," and I don't quite understand how 200 can be much higher than 200, but nevertheless, after those arguments and amendments were made, my opinion is that the claims cannot be stretched under the doctrine of equivalents to encompass numbers which are outside the 200 to 400 range and the 5—I'm sorry, the 6 to 9 pH range.
- Q. Now, did you also notice, when you were going through the patent office's actual complete file—and which has been marked, by the way, as Defendant's Exhibit in this lawsuit—did you notice what the patent examiner determined as to whether the idea of applying ultrafiltration to these particular dyes, whether that the idea itself was something [934] that was patentable?
- A. No. The examiner said that that idea was not new and he cited the Booth patent, and of course he distinguished over the Booth patent strictly on the basis

of a different pressure range and a different pH range, as you have heard discussed before.

## DONALD LEAVITT (CROSS)

- [964] Q. Did you ever actually go out to Warner-Jenkinson and look at a real honest-to-goodness operating system to see what it was doing?
  - A. No, I did not.
- Q. Mr. Leavitt, I'd like to place here on the easel, if I may, a diagram we've made earlier in this case by Professor Kinman, and he was describing what he saw when he went to Warner-Jenkinson as far as what their system looked like. And he drew the membrane modules here and he explained to us that he had actually observed from the system itself and from documentation what the pressures were on each one of these modules. You didn't do that, did you?
- A. I asked the client what pressures they were using in terms of what the patent described as pressures. The pressure in the upstream side of the membrane which is the sense in which pressure is used in the patent.
- Q. Did you understand that there is actually several upstream sides of the membrane? There's one here and there's also one here?
  - A. Possibly.
- [965] Q. Did Dr. Solter explain to you that the initial pressure might be 525 but that the intermediate and the final pressures might be much lower than that?
  - A. No, we didn't discuss that.
- Q. And Dr. Solter also didn't explain to you, did he, that in fact in the actual system that Warner Jenkinson is using to practice this process the intermediate and the final pressures may be as low as in the 200 to 400 pounds per square inch range?
  - A. No.

[969] Q. And under the column or the heading "pH," under "patent" Mr. Noonan says 6 to 9, and under the Warner-Jenkinson column he says 4 to 8?

A. Yes.

Q. And it was your testimony this morning, was it not, sir, that you were being informed or you said that you were being informed that their pH was really 5.5?

A. I was informed that they were actually operating

at a pH of 5.4 or below.

- Q. And in this letter a month before you rendered your formal opinion Dr. Solter is telling you that, "The parameters specified in the patent claims and those in our process are as follows," and he tells you the pH is 4 to 8?
  - A. I found out they weren't using a pH above 5.5.

Q. That is based upon what Dr. Solter told you?

A. Dr. Solter and others.

## DR. LANCE SOLTER (DIRECT)

[1004] Q. Okay. How long have you been working with dyes out at Warner-Jenkinson?

A. Well, I would start with the very first year in 1974, so I've been associated with dye chemistry for about 18 years.

Q. What I'd like to do is just take you right to what we're talking about in this case, and that is the ultrafiltration processes for your dyes.

Now, and if we can, what number is this?

MR. TAFT: Your Honor, I would like to identify—rather than get a sticker, I just wrote it on there, Defendant's Exhibit 632.

[1005] Q. I wonder if you would first of all tell these folks how this exhibit was prepared?

A. Well, basically what we did was we went back through the documents and I listed the documents basically in order with the dates, and we reviewed them together and that's what this is.

- Q. This is a time line, okay. And what does it represent?
- A. Well, it represents basically in condensed form what we've done on ultrafiltration starting with 1982 and going through to the date that we discovered about the Hilton Davis patent.

[1011] Q. Okay. Now, why did you want to take out triazene at the pH of 5 before you ever sent it up there in August of 1982?

A. Because that was a part of our normal process before filtration.

- [1040] Q. By the way, at this point in time you have already ordered one set of equipment, you are testing on another set, you have done this with your dyes that you have done. Did you [1041] have any idea that Hilton Davis had been up to Osmonics?
  - A. No, I did not.
- Q. And this is January, the patent issued on December 24, 1985. I would just write that on there, 1985. Did you have any idea whatsoever, when you are issuing orders to rent equipment and now you are testing a second set of equipment, did you have any idea whatsoever that any patent had been issued to Osmonics?

A. No, I had not.

Q. I'm sorry, to Hilton Davis?

A. No, I had not.

[1044] Q. And then we get into August and you are discussing with Osmonics to start up the larger rental unit at Warner-Jenkinson, and then by September you are producing full five thousand pound batches of Red 40 on Osmonics larger?

[1045] A. That's correct.

Q. And that's larger than—well, you do much larger ones now, don't you?

A. Yes, we do.

Q. And then, in August, you actually sold Red 40 from ultrafiltration to customers and you started producing \* \* \* on the larger equipment?

A. That's correct.

O. And those are full batch sizes?

A. That's correct.

Q. And then you discovered the Hilton Davis patent?

A. Right. Dr. Sujeeth did a literature search, and around October 14th, that's the notation he has in that book, he discovered the Hilton Davis patent.

Q. Now, up to this point in October that Sujeeth discovered the Hillton Davis patent, to your knowledge, did you, or anyone else at Warner-Jenkinson, have any knowledge whatsoever that Hilton Davis was doing ultrafiltration, that they had been to Osmonics or that they had any patent?

A. No, there was no such knowledge.

O. None?

A. None.

[1046] Q. All these tests were run before you ever saw the patent or ever had any idea that Hilton Davis was doing ultrafiltration, is that correct?

A. That is correct.

[1047] Q. And so you had established process conditions at 450, 470, 500, 520, 520, on three different sets of equipment [1048] prior to ever hearing of the patent?

A. That's correct.

[1055] Q. I'd like to talk about, then, once the patent was delivered to you, what happened after that?

A. After the patent was found, I don't remember if I called Jim Noonan or if I had Sujeeth to copy the patent to him or what, but I know that I did let Jim Noonan know about the patent immediately.

[1056] O. What happened after that?

A. Well, after that, Jim sent a letter to Don Leavitt. I believe it was in November.

Q. Asking for a legal opinion?

A. Asking for a legal opinion, yes.

Q. And then after that, did you have a meeting with Mr. Leavitt and others and were you given a legal opinion verbally as to whether your process conditions-when I say "yours" I mean Warner-Jenkinson's process conditions-violated the Hilton Davis patent and whether the Hilton Davis patent was valid?

A. I am positive we were given a legal opinion before we kept on producing, but at that time we had already produced color before we learned about the patent. I don't remember too much about that meeting, quite frankly. I think, based on the notes that Don Leavitt has put in the testimony here, that I believe was January, was it?

O. Yeah.

A. Yeah, but I do know for a fact that before I started production again I had a legal opinion.

Q. When did you start production again?

A. It would have to be after that January.

O. So sometime either in January or before then you received some verbal legal opinion that you didn't infringe and the patent was probably invalid?

[1057] A. Yes.

[1058] O. And let me ask you about your process conditions. You have already told us what they were. When you actually then went forward and bought your equipment in late '87 and then in '88, did you change those process conditions, did you ever change them to operate differently than the way you had developed those process conditions before you ever knew about the patent?

A. No, we always ran those processes just like we told Don Leavitt. We were always above 450 psig and we were always below a pH of 5.5. In the case of pH, we were always at 5. In the case of the pressure, we were between 480, 470 and 500 [1059] always.

Q. Why did you operate at the higher pressures?

- A. We operated at the higher pressures because, as you would see, we got greater flux. This is more permeate going through the membrane at the same time. This means you got more removal of sulfates and of the intermediates, plus you would be able to concentrate faster at the higher pressures. Once you stopped the dye filtration, once the purification was done, then all you had to do was to concentrate the higher pressures. You would concentrate faster. We also found out that the dye, removal of the dye loss was less at the higher pressures.
- Q. And did you find that out before you ever heard of this patent?
- A. We knew that before we heard of the patent in October, ves.
- Q. Now, when you then went forward and bought the equipment, the permanent equipment and actually started converting over all of your manufacture of these materials to the new equipment to ultrafitration, did you, or, to your knowledge, any other person anywhere at Warner-Jenkinson, ever use anything from the Hilton Davis patent?
- A. We never used anything from the Hilton Davis patent.

O. Why not?

A. Well, we felt like, you know, first of all, we had a better process. That would be one reason. Number two, they [1060] had a patent. If that patent was valid, we could not use their process, but we did not need to. We had a better process and we had a legal opinion that said we were not infringing.

Q. How long have you been operating at a pH of 5 to destroy triazene?

A. That goes back beyond 1982.

Q. And you have always done it that way?

A. Yes.

### GERARD GACH (CROSS)

[1262] Q. I want you to look through there, and I want you to pull out the paper that looks like this. It's got Warner-Jenkinson at the top and then it says "Ideas for second application test."

A. Um-hum. I have that.

- Q. And what that paper says is "Warner-Jenkinson, ideas for second application test, red dye, dilute 10 percent solution to 5 percent like Hilton Davis."
  - A. That's correct.
- Q. Then it says, "Use HD," Hilton Davis, "flow rate and dye passage figures for the 50 HCA." That's what it says in there, doesn't it?

[1263] A. That's right.

Q. And that's in contemplation of Warner-Jenkinson having done a second test on the Red 40 dye, wasn't it?

A. That's correct.

### DR. WAYNE COOK (CROSS)

[1578] Q. And I'm not talking about the chemistry, I'm talking about the process of ultrafiltration. Does the pH make a difference?

A. Between a pH of 2 and 8, I would not expect

to see much difference.

O. Okav.

For Red 40.

O. Can we write that down, then?

Sure.

O. So between pH of 2 to 8 you do not expect a difference?

A. As far as the membrane performance is concerned presuming that there is no chemistry changes. That's critical.

[1579] O. We're going to get to that. I'm talking about whether or not-

A. I just want to make sure.

Q. —whether or not it's functioning to separate.

A. We're assuming that the chemistry does not change between the pH of 2 and a pH of 8, that all that's happening is that you're taking the same solution, we've changed the pH, and there's been no other changes in chemistry—

Q. Correct.

A. —will the membrane perform the same across that range. Is that—do I understand the question correctly?

Q. Yes.

A. Okay. Yes. I would not expect to see any major differences.

Q. Do not expect—

Major differences.

Q. —major differences. The reason I asked you that question is because Mr. Schmit asked you something similar at Page 193 of the transcript. The question was, "In terms of whether or not the process will work to separate the dye from the impurities, does it make a difference what pH you operate at?" And your answer was, "Not to my knowledge." Are you consistent?

[1580] A. I think so.

Q. It doesn't make a difference.

[1581] Q. And the reason you chose 9 was because that's just where the coupling reaction pH lies?

A. That's about where it ends up, yes.

Q. And so you put that in your patent application?

A. Yes.

Q. And then even though Osmonics had told you you could operate 2 to 8, you cut it off at 6?

A. Right.

Q. And the reason you did that was because of your Red 40 process would foam if you went below 6?

A. That's correct.

DR. WAYNE COOK (REDIRECT)

[1623] Q. During the time that you were running all these tests, going all the way down to 2.2 and 3 and 4 and 5, was the process running the test actually doing what it was supposed to do?

A. Yes.

\* \* \*

### Defendant's Exhibit 599

LAW OFFICES OF

SENNTGER, POWERS, LEAVITT AND ROEDEL

611 Olive Street St. Louis, Mo. 63101

October 12, 1987

Mr. James E. Noonan Warner-Jenkinson Company P.O. Box 14538 2526 Baldwin Street St. Louis, Missouri 63178-4538

Dear Jim:

Confidential

Attorney-Client Privileged

File 7285

This letter and opinion will confirm and supplement our recent conference regarding Hilton-Davis U.S. patent no. 4,560,746 directed to an ultrafiltration process for the purification of dyes useful in foodstuffs. As background for the opinion expressed herein, we have studied the Hilton-Davis patent, the file histories of the issued patent and of the abandoned original application Serial No. 481,038, and the prior art of which we are currently aware. We have also taken into account the information which you and your technical people have provided to me during our various meetings on this subject.

### Possible Infringement of the Hilton-Davis Patent

The claims of the Hilton-Davis patent are directed to an improvement in a process for the purification of a dye from among those enumerated in claim 1 of the patent, the improvement comprising the steps of subjecting an aqueous solution of the reaction mixture resulting from the recited coupling or sulfonation reactions to ultrafiltration through a membrane having a nominal pore diameter of 5-15 Angstroms under a hydrostatic pressure of approximately 200 to 400 p.s.i.g. at a pH from approximately 6.0 to 9.0 to cause separation of impurities from the dye, and, when substantially all of the impurities have been removed from the concentrate containing the dye, recovering the dye in approximately 90% purity from the concentrate by evaporation of the concentrate to dryness. Claim 1 defines the improvement in the above-stated terms while dependent claims 2-17 define other features of the alleged invention, e.g. claim 2 specifies that the membrane may be composed of cellulose acetate, polyamide or polyvinylfluoride.

In the Hilton-Davis patent specification or description, no operative hydrostatic pressure other than the range of 200 to 400 p.s.i.g. specified in claim 1 is set forth. As to pH, the specification states (col. 7, lines 55-61) that the reaction mixture fed to the ultrafiltration unit generally has a pH of approximately 9.0, but that it is preferred to adjust the pH to approximately 6.0 to 8.0 before passage through the ultrafiltration membrane.

In the first Office action, the Patent and Trademark Office Examiner rejected all claims of the Hilton-Davis application as unpatentable over Dynapol's Booth et al. U.S. patent no. 4,189,380 which, as you know, discloses a process for purifying polymeric colorants by ultrafiltration through a suitable membrane such as those marketed by Osmonics, Inc. In response to this rejection, Hilton-Davis' attorney amended claim 1 of the application to incorporate the pH range of 6.0 to 9.0 now found in claim 1 of the issued patent and argued that the claimed process patentably distinguished over the Booth et al. patent for the following reasons:

(1) The minimum molecular weight of the polymeric dyes purified by Booth et al. is 610 x 10<sup>24</sup> whereas the dyes purified by the Hilton-Davis process have molecular weights ranging from 376 to 588.

- (2) The Booth et al. process requires the addition of salts to the feed solution whereas the Hilton-Davis process does not require such addition.
- (3) Booth et al. teach that it is often advantageous to add and/or maintain additional materials in the ultra-filtration feed to maintain the pH above 9 and preferably from 11 to 13.
- (4) Booth et al. carry out ultrafiltration at pressures from 25 to 200 p.s.i.g., preferably at 50-150 p.s.i.g. whereas the Hilton-Davis process is carried out at "much higher" pressures, i.e. 200-400 p.s.i.g., and at much lower pH's, i.e. approximately 9 but preferably 6.0 to 8.0.

After making such amendment to specify the pH range found in claim 1 and presenting such arguments, the Examiner allowed the application and the '746 patent was issued to Hilton-Davis.

Based upon our conference of September 28, 1987, it is our understanding that Warner-Jenkinson plans to commence use of an ultrafiltration or reverse osmosis process using a polysulfone membrane at an operating hydrostatic pressure at least as high as 450 p.s.i.g. and at a pH of 5.5 or below. We further understand that by operating at such higher pressures in excess of 450 p.s.i.g., you obtain the benefit of faster removal of impurities with a resultant higher color concentration (30-35%) in the final product. This in turn renders the spray drying of the color concentrate more energy efficient.

Based upon our above-stated understanding of the operating conditions which Warner-Jenkinson will utilize in its ultrafiltration process, it is our opinion that the practice of such process clearly avoids literal infringement of all claims of the Hilton-Davis '746 patent. Thus, an operating pressure at least as high as 450 p.s.i.g. and a pH of 5.5 or below plainly fail outside the stated ranges set forth in the patent claims.

We have also considered whether or not the practice of the ultrafiltration process under the above-stated operating conditions may subject Warner-Jenkinson to possible liability for infringement under the so-called doctrine of equivalents. Under this doctrine, even though a process may avoid literal infringement of the patent claims, infringement may nevertheless be found if the accused process performs substantially the same function in substantially the same way to achieve the same result. For several reasons, we have concluded that the doctrine of equivalents is inapplicable under the circumstances here obtaining.

First of all, as noted above, Hilton-Davis obtained the allowance of the patent claims only after inserting the recited pH range in the patent claims and arguing that its process distinguished over the Booth et al. patent on the basis of such pH range and the 200-400 p.s.i.g. pressure pressure range. Under these circumstances and taking into account the applicable legal principles, we believe Hilton-Davis is estopped from urging that the stated pH and pressure ranges be "stretched" to encompass the higher pressures and lower pH which Warner-Jenkinson will be employing, i.e. Hilton-Davis will not be heard to say that these parameters (pressure and pH) are material to distinguish over the prior art and immaterial to ensnare an accused infringer. Moreover, the fact that you obtain an added benefit from the use of higher operating pressures also militates against the application of the doctrine of equivalents.

Accordingly, it is our opinion that Warner-Jenkinson by operating an ultrafiltration process under the pressure and pH conditions noted above avoids literal infringement of the '746 patent claims and is also not properly chargeable with infringement under the doctrine of equivalents.

## Validity of the '746 Patent

As previously noted, the only prior art reference cited and applied against the Hilton-Davis application which matured into the '746 patent is Booth et al. patent no. 4,189,380. However, in our review of this matter, we have concluded that Osmonics, Inc.'s published March 1978 technical bulletin concerning its SEPA membrane is far more pertinent to the patentability of the '746 subject matter. While this Osmonics bulletin was disclosed to the Patent and Trademark Office by Hilton-Davis' attorney, it was obviously not considered by the Examiner.

The Osmonics bulletin discloses the company's SEPA cellulose acetate polymer membrane and contains a comprehensive teaching of suggested process parameters in carrying out ultrafiltration for different applications (including textile dye removal) and for purifying products of different molecular weights. Thus, for materials with molecular weights in the range 400 to 600 (generally the range noted in Hilton-Davis' arguments to the Patent and Trademark Office), the bulletin recommends membranes with a nominal pore size between 8 and 11 Angstroms and operating pressures between 200 and 400 p.s.i.g. It further mentions the use of pH's between 2 and 8. Interestingly and perhaps not coincidentally, these ranges match or overlap the ranges set forth by Hilton-Davis for membrane pore size, pressure and pH. In fact, the pressure range is precisely that specified in the '746 patent claims.

In our judgment, the disclosure of the Osmonics bulletin is not only clearly more pertinent than that of the Booth et al. patent, but is of such close relevance as to render the validity of the '746 patent claims highly questionable. Applying the statutory standard, it seems clear to us that one skilled in the art having knowledge of the Osmonics bulletin disclosure would regard it as obvious to select a cellulose acetate membrane of a pore size in the range of 5-15 Angstroms and operate at a pressure of 200 to 400 p.s.i.g. and a pH at least in the range of 2 to 8. The Osmonics bulletin thus contains within its four corners all of the information one skilled in the art would need to develop the patented process.

It is therefore our opinion that there is a strong likelihood that the Hilton-Davis '746 patent is invalid as defining subject matter which was clearly obvious to one of ordinary skill in the art at the time the alleged invention was made in the light of the Osmonics' disclosure.

In summary, it is our considered opinion that Warner-Jenkinson is free to practice its ultrafiltration process at a pressure at least as high as 450 p.s.i.g. and at a pH of 5.5 or below without infringing the Hilton-Davis '746 patent and that the patent is most likely invalid on the basis stated above.

If you or Terry O'Reilly have any questions concerning this matter, kindly let us know. We are retaining copies of the Hilton-Davis file histories, but if you or Terry wish to review them, we will forward copies to you.

Sincerely,

/s/ Don G. Leavitt
Donald G. Leavitt

3jmf

cc: Terry O'Reilly

## Defendant's Exhibit 632

	WARNER	-JENKINSON	DYE	ULTRAFII	LTRATION
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-	Osmonics tested our Red #40 & Yellow #10 dyes at its testing lab in Minneapolis.	Aug. 17-19 1982
-	Analyze Osmonics' preliminary test data.	Aug., 1982
-	Received from Osmonics Red #40 & Yellow #10 samples ultrafiltered by Osmonics.	Sept., 1982
•	Discussing with Osmonics' technical personnel data performed by Warner-Jenkinson on Red #40 & Yellow #10 process analysis.	Oct., 1982
•	Received formal report from Osmonics of August test results on Red #40 & Yellow #10.	Nov., 1982
•	Discussions concerning application of ultrafiltration and testing of Yellow #10, Red #40, Blue #1 & Yellow #5 dyes.	Nov., 1982 to Feb., 1983
•	Meeting at Warner-Jenkinson with Osmon- ics' representative and discuss decision to pursue Blue #1 investigation and testing.	Feb., 1983
-	Prepare written test objectives for Blue #1 and schedule date for test at Osmonics.	Mar., 1983
-	Osmonics performs Blue #1 tests at its testing lab in Minneapolis.	May, 1983
•	Analysis of results of tests on Blue #1 and discussions with Osmonics' personnel concerning test results, and problems with chromium molecule, and alter formula for making Blue #1.	June- Aug., 1983
-	Schedule second Blue #1 tests at Osmonics.	Sept., 1983
-	Formal report by Osmonics of April test results on Red #3.	July, 1985

-	Discuss with Osmonics Red #3 test report and analysis and research.	Aug Sept., 1985
•	Schedule meeting with Osmonics at Warner-Jenkinson to discuss leasing filtration equipment.	Oct., 1985
•	Discussion with Osmonics regarding equip- ment, and investigate alternate supplier of equipment (Pasilac).	Nov., 1985
-	Continue discussions of rental of equip- ment from Osmonics and from Pasilac.	Dec., 1985
•	Issue order renting Osmonics equipment and order testing of Red #40 & Yellow #10 on Pasilac equipment.	Jan., 1986
•	Osmonics' equipment installed at Warner-Jenkinson, and begin test of Red #40, Yellow #10, Yellow #6, Blue #1, Red #3 and Green #3 with Osmonics' equipment. (Testing continued through July, 1986.) Also, Pasilac performs Red #40 & Yellow #10 testing.	Feb., 1986
•	Continue testing. Discuss testing with Osmonics personnel.	Mar., 1986
•	Continue with above and second round of tests by Pasilac on Red #40 & Yellow #10.	Apr., 1986
•	Successfully manufacture Green #3 with- out using lead oxide molecule, and discuss Red #40 testing on Carre equipment.	May, 1986
•	Successfully manufacture Blue #1 with- out using chromium molecule, and discuss renting larger filtering unit from Osmonics.	June, 1986
•	Osmonics performs second Blue #1 tests at its testing lab in Minneapolis.	Oct., 1983
•	Warner-Jenkinson analyzing and discussing with Osmonics the test results.	Nov., 1983
-	Received formal Osmonics report on Blue #1 tests.	Dec., 1983

•	Analyzing and discussing Blue #1 test results.	Jan., 1984
-	Philip Morris to Sell Warner-Jenkinson.	Jan., 1984
-	Philip Morris sells Warner-Jenkinson to Universal Foods.	Apr., 1984
-	Universal Foods restores research & development funds to Warner-Jenkinson.	Oct., 1984
•	Research on manufacturing Blue #1 dye without using chromium molecule. Also begin research on manufacture of Green #3 dye without using lead oxide molecule.	Oct., 1984
•	Begin discussions about testing Red #3 at Osmonics.	Feb., 1985
-	Continue analysis and order Red #3 testing at Osmonics.	Mar., 1985
•	Osmonics performs Red #3 tests at their testing lab in Minneapolis.	Apr., 1985
	Analyze & discussing Red #3 Osmonics test results.	May, 1985
•	Continuing extensive research in lab on manufacturing Blue #1 & Green #3 dyes without chromium and lead oxide mole- cules.	June, 1985
•	Order Osmonics' larger filtering rental unit, and visit Carre to view test of Carre equipment on Red #40.	July, 1986
-	Second Carre test work on Red #40. Order Pasilac rental equipment.	Aug., 1986
-	Discussion with Osmonics regarding start- up of larger Osmonics' rental equipment at Warner-Jenkinson.	Aug., 1986
-	Producing full 5,000 lb. batches of Red #40 on Osmonics' larger rental equipment at Warner-Jenkinson.	Sept., 1986

- ➤ Selling Red #40 from ultrafiltration to Oct., 1986 customers of Warner-Jenkinson, and producing Blue #1 & Green #3 on the Osmonics' larger rental equipment, and order Carre rental equipment.
- ► First discover Hilton-Davis' patent. Oct., 1986.

# SUPREME COURT OF THE UNITED STATES OFFICE OF THE CLERK Washington, D. C. 20543

February 26, 1996

Mr. H. Bartow Farr III Farr & Taranto 2445 M Street, NW Washington, DC 20037

> Re: Warner-Jenkinson Company, Inc. v. Hilton Davis Chemical Co. No. 95-728

Dear Mr. Farr:

The Court today entered the following order in the above entitled case:

The petition for a writ of certiorari is granted.

Sincerely,

/s/ William K. Suter WILLIAM K. SUTER Clerk

APR 11 1996

Suprable Court, U.S.

ILED

CLERK

## Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

### BRIEF FOR PETITIONER

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GHPM

### QUESTION PRESENTED

Whether patent infringement exists whenever the accused product or process is "equivalent" to the invention claimed in the patent, in that the differences are not "substantial" as determined by a jury, even though the accused product or process is outside the literal scope of the patent claim.

## TABLE OF CONTENTS

	Page
QUESTION PRESENTED	i
TABLE OF AUTHORITIES	v
OPINIONS BELOW	1
URISDICTION	1
STATUTORY PROVISIONS INVOLVED	1
STATEMENT	1
A. Background	1
B. District Court Proceedings	6
C. Court of Appeals Decision	7
SUMMARY OF ARGUMENT	10
ARGUMENT	13
I. A STANDARD OF NON-LITERAL INFRINGE- MENT BASED ON MERE LACK OF "SUB- STANTIAL" DIFFERENCES IS FUNDA- MENTALLY INCOMPATIBLE WITH THE 1952 PATENT ACT	13
A. An "Insubstantial Differences" Infringement Standard Is Inconsistent With the Statu- torily Prescribed Role of Claims in Setting Clear Outer Limits on the Scope of Patent Monopolies	13
B. The "Insubstantial Differences" Standard Is Inconsistent With the Congressionally Pre- scribed Methods, Focusing on the Expert Patent and Trademark Office, for Defining and Correcting the Scope of Patent Monopo- lies	27

TABLE OF AUTHORITIES

	TABLE OF CONTENTS—Continued	
		Page
II.	EVEN IF GRAVER IS CONTROLLING, ANY	وتناع
	NON-LITERAL INFRINGEMENT SHOULD BE NARROWLY LIMITED TO MATTERS	
	THAT THE PATENTEE ASSERTED (RATH-	
	ER THAN SURRENDERED) IN THE APPLI-	
	CATION PROCESS AND DISCLOSED IN THE	
	PATENT AS EQUIVALENT TO THE PAT-	
	ENT'S VALID CLAIMS	31
	A. Graver Does Not Support the Federal Cir-	-
	cuit's Broad Standard	31
	B. Non-Literal Infringement Should Not Extend	
	to Any Matter Surrendered During the Pat-	
	ent Application Process, as Shown by the	
	Patent File	34
	C. Non-Literal Infringement Should Extend at	
	Most Only to Matters Disclosed in the Patent	
	as Equivalent to the Patent's Valid Claims	38
III.	THE 1952 PATENT ACT IS BEST READ AS	
	NOT INCORPORATING ANY DOCTRINE OF	
	EQUIVALENTS CREATING LIABILITY FOR	
	NON-LITERAL INFRINGEMENT	41
	A. Any Non-Literal Infringement Is Inconsistent	**
	With the 1952 Act	40
		42
	B. Silent Incorporation of Graver Should Not Be	
	Attributed to Congress	42
	C. No Overriding and Authoritative Policy Sup-	
	ports Non-Literal Infringement	46
ONC	CLUSION	50
		00
CAT	UTORY APPENDIX	1a

a	168	rage
	Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation, 402 U.S. 313 (1971)	
	Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989)	
	Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 587 (1898)	45
	Brenner v. Manson, 383 U.S. 519 (1966)	23, 37
	Brown v. Duchesne, 60 U.S. (19 How.) 183 (1857)	13
	Burns v. Meyers, 100 U.S. (10 Otto) 671 (1880)	17
	Cardinal Chem. Co. v. Morton Int'l, Inc., 113 S. Ct. 1967 (1993)	
	Charles Greiner & Co., Inc. v. Mari-Med Mfg. Inc., 962 F.2d 1031 (Fed. Cir. 1992)	49
	Cimiotti Unhairing Co. v. American Fur Ref. Co., 198 U.S. 399 (1905)	18, 26
	Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574 (2d Cir. 1929), cert. denied, 281 U.S. 741 (1930)	
	Coleco Industries, Inc. v. U.S. Int'l Trade Comm'n, 573 F.2d 1247 (C.C.P.A. 1978)	48
	Consolidated Elec. Light Co. v. McKeesport Light Co., 159 U.S. 465 (1895)	37
	Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405 (1908)	18
	Custis v. United States, 114 S. Ct. 1732 (1994)	. 26
	Davis v. United States, 495 U.S. 472 (1990)	
	Deepsouth Packing Co. v. Laitram Corp., 406 U.S.	
		, 24, 26
	Ethyl Molded Prods. Co. v. Betts Packaging Inc.,	
	9 U.S.P.Q.2d 1001 (E.D. Ky. 1988)	45

Exhibit Supply Co. v. Ace Patents Corp., 315 U.S.

Fogerty v. Fantasy, Inc., 114 S. Ct. 1023 (1994).... General Elec. Co. v. Wabash Appliance Corp., 304

Goodyear Dental Vulcanite Co. v. Davis, 102 U.S.

Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874) ....

19

38

15

126 (1942) .....

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TABLE OF AUTHORITIES—Continued	
Pag	e
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(1991) 2	
Graham v. John Deere Co., 383 U.S. 1 (1966)23, 35, 4	6
Graver Tank & Mfg. Co. v. Linde Air Products	_
Co., 336 U.S. 271 (1949)20, 32, 3	9
Graver Tank & Mfg. Co. v. Linde Air Products Co.,	
("Graver"), 339 U.S. 605 (1950)passin	n
Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946)	25
Hartford-Empire Co. v. United States, 323 U.S. 386	
(	4
and the same of th	15
Hughes Aircraft Co. v. United States, 717 F.2d 1351 (Fed. Cir. 1983)	19
Ives v. Sargent, 119 U.S. 652 (1887)	30
Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S.	
(5 Otto) 274 (1877)	80
Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d	
1422 (Fed. Cir. 1989)	19
Linde Air Products Co. v. Graver Tank & Mfg. Co.,	
86 F. Supp. 191 (N.D. Ind. 1947), rev'd in part,	
167 F.2d 531 (7th Cir. 1948), rev'd in part, 336	
U.S. 271 (1949), 339 U.S. 605 (1950) 31, 3	32
London v. Carson Pirie Scott & Co., 946 F.2d 1534	
(	19
The second secon	18
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	17
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	49
the same of the sa	16
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	20 30
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ing Co., 250 U.S. 336 (1919)	19
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	18
O'Reilly v. Morse, 56 U.S. (15 How.) 62 (1854)	37

The state of the s	
TABLE OF AUTHORITIES—Continued	Page
	rage
Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.: 931 (Fed. Cir. 1987), cert. denied, 485 U.S. 9	61
(1988)	48, 49
822 F.2d 1528 (Fed. Cir. 1987)	
Permutit Co. v. Graver Corp., 284 U.S. 52 (1931)	
Pierce v. Underwood, 487 U.S. 552 (1988)	
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Sanitary Refrigerator Co. v. Winters, 280 U.S.	
(1929)	.8, 19, 44
Sears Roebuck & Co. v. Stiffel Co., 376 U.S. 25	25 24
Silsby v. Foote, 55 U.S. (14 How.) 218 (1853)	
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Fed. 126 (2d Cir. 1916)	35
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Trade Comm'n, 805 F.2d 1558 (Fed. Cir. 1986)	21, 49
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228 (1942)	20
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Co., 322 U.S. 471 (1944)	20
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(1854)	15, 16
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88 (1859)	46
atutes	
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No. 97-164, 96 Stat. 25	23
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§ 7(a)	29
§ 8	
§ 81	29
§§ 100-105	
§§ 101-103	39

## viii

TABLE OF AUTHORITIES—Continued	Page
§ 108	8
§§ 111-122	28
§ 112	
§§ 131-146	
§ 131	
§ 132	
§ 134	37
§ 141	37
§ 145	
§ 151	
§§ 151-157	28
§ 154	
§ 2519,	
§ 25211, 29,	
§ 271	
§ 281	
§ 28214,	
§§ 301-307	
Patent Act of 1836, ch. 357, 5 Stat. 117	
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28 U.S.C. § 1254	
Administrative Materials	
37 C.F.R. § 1.2	34
§ 1.11 (a)	34
§ 1.19	34
§ 1.75(d) (1)	37
§ 1.118	37
§ 10.7	29
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§ 608.01 (k)	15
§ 806.04(e)	15
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TABLE OF AUTHORITIES—Continued	
AND AND AND AND COMMENTS AND COMMENTS AND ADDRESS OF THE AND ADDRESS OF THE AND ADDRESS OF THE A	Page
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Cong., 1st Sess. (1949)	25
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Comm., 82nd Cong., 1st Sess. (1951)25,	26, 27
98 Cong. Rec. A415 (Jan. 28, 1952)	27
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(1980)	23
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§ 8.03[2]	14
§ 15.02	30
§ 18.02[2]	33
§ 18.04	21, 49
Appendix 12	29
R. Cooter & T. Ulen, Law and Economics (1988) Dienner, Claims of Patents, 18 J. Pat. Off. Soc'y	47
389 (1936)	43
Breadth, 21 Rand J. Econ. 106 (1990)	47
Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7	
Harv. J.L. & Tech. 281 (1994)	48
Hantman, Doctrine of Equivalents, 70 J. Pat. &	
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Equivalents in the Federal Circuit, 69 J. Pat. &	
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TABLE OF AUTHORITIES—Continued	Page
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Soc'y 248 (1972)	29, 48
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21 Am. Intell. Prop. L. Ass'n Q. J. 1 (1993) Lutz, Evolution of the Claims of U.S. Patents, 20	22
J. Pat. Off. Soc'y 134 (1938)	16
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Quarterly 17 (Fall 1991)	22
R. Merges, Patent Law and Policy (1992)	37, 48
Principles (1993)	23, 33
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and Economic Performance (3d ed. 1990)	47
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Clara L. Rev. 901 (1989)	49
Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde	
Case, 33 J. Pat. Off. Soc'y 19 (1951)	44
Tilton, The Doctrine of Equivalents in Patent Cases, 32 J. Pat. Off. Soc'y 861 (1950)	44
Woodward, Definiteness and Particularity in Patent	-
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### BRIEF FOR PETITIONER

The Federal Circuit held in this case that a patentee always may resort to two different causes of action for infringement—one based on the patent claim's literal coverage of the accused product or process; the other based on the lack of "substantial differences" between the patent claim and the accused product or process (as found by a jury in a damages case). Petitioner Warner-Jenkinson challenges this standard for infringement.<sup>1</sup>

### OPINIONS BELOW

The opinions of the court of appeals sitting en banc (Pet. App. 1a-152a) are reported at 62 F.3d 1512. The panel opinion on other issues (Pet. App. 153a-59a) is not reported. The district court's opinion on post-judgment motions (Pet. App. 160a-67a) is not reported.

### JURISDICTION

The court of appeals entered judgment on August 8, 1995. Pet. App. 1a, 153a. The petition for a writ of certiorari was filed on November 6, 1995, and granted on February 26, 1996 (J.A. 154). This Court has jurisdiction under 28 U.S.C. § 1254.

### STATUTORY PROVISIONS INVOLVED

Pertinent provisions of Title 35, U.S. Code, are set out in an appendix to this brief.

### STATEMENT

### A. Background

This case arises out of separate, independent efforts by petitioner Warner-Jenkinson and respondent Hilton Davis to develop an improved process, known as ultrafiltration, for removing impurities from certain dyes. Both Warner-Jenkinson and Hilton Davis manufacture food dyes, in-

<sup>&</sup>lt;sup>1</sup> Warner-Jenkinson is a wholly owned subsidiary of Universal Foods Corporation and has no subsidiaries other than wholly owned ones. See Sup. Ct. R. 29.6.

cluding Red Dye #40 and Yellow Dye #6. "Historically, [both parties] used an expensive and wasteful process known as 'salting out' to purify the dyes." Pet. App. 2a. Ultrafiltration—which "uses osmosis to separate components of a solution by drawing some of the components, but not others, through a membrane" (Pet. App. 2a-3a)—produces a dye of high purity at less cost and with less loss of the dye itself. The use of ultrafiltration to purify dyes was known at least as early as 1976, when two individuals unrelated to the parties here applied for what became the "Booth patent," No. 4,189,380, issued in 1980, See C.A. Jt. App. 2210.

Warner-Jenkinson and Hilton Davis developed their respective ultrafiltration processes on independent, parallel tracks. Both of these tracks involved dealings with a company called Osmonics, Inc., which by the early 1980s already was "known to specialize in the development of membranes and equipment for fluid purification by ultrafiltration." Pet. App. 85a (Nies, J., dissenting). Having been separately approached by the companies, Osmonics selected certain membranes for testing and specified the process conditions for the tests—i.e., acidity of the solution (pH), pressure, and membrane pore size—first for Warner-Jenkinson and later for Hilton Davis. In March 1983, after Osmonics completed tests for both companies, Hilton Davis (unbeknownst to either Osmonics or Warner-Jenkinson) applied for a patent for the process. J.A. 73.

Hilton Davis's initial efforts to obtain a patent met with rejection at the U.S. Patent and Trademark Office (PTO). J.A. 78-82. The application followed the requirements of Section 112 of the 1952 Patent Act, 35 U.S.C. § 112, which directs that the "specification" portion of the application contain a detailed description of the invention, designed to "enable" other skilled persons to make it (Section 112 (paragraph 1)), and then conclude "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention" (Section 112 (paragraph 2) (emphasis added)). In the "claims" portion of its original application, Hilton Davis stated its principal claim for its

invention without specifying a pH level for the solution used in the filtering process. See J.A. 76-77.<sup>2</sup> In October 1984, Hilton Davis was told by the PTO Examiner that the process it claimed was obvious given the ultrafiltration process of the 1980 Booth patent, and hence not patentable, 35 U.S.C. § 103. J.A. 81.<sup>3</sup>

Hilton Davis abandoned the initial application (see J.A. 73, 84-85, 88) and, in November 1984, filed a second application—a "continuation in part" ("CIP"). J.A. 86. That application, as filed, likewise included no pH limit in the principal claim. J.A. 90.4 In February 1985, the PTO Examiner rejected this application too, as obvious in light of the Booth patent. J.A. 91-95.

Hilton Davis met, through its patent agent, with the PTO Examiner on May 9, 1985. See J.A. 106. The Examiner Interview Summary Record prepared by the Examiner (J.A. 96-98) states that Hilton Davis "pointed

The measurement of pH (potential of hydrogen) is on a logarithmic scale: the numbers represent exponents. A pH of 5, for example, reflects a hydrogen ion concentration of 1/10<sup>5</sup> (.00001), whereas a pH of 6 reflects one tenth the hydrogen ion concentration—1/10<sup>6</sup> (.000001). Thus, a single pH unit represents a tenfold difference in hydrogen ion concentration. See J.A. 123-24. The lower the pH below 7 (which is "neutral"), the more acidic the solution.

For clarity, we focus throughout this brief on the pH condition of the patent claims, as the starkest example of the difference between Warner-Jenkinson's process and Hilton Davis's patent claims. Other differences, such as the pressure conditions, exist as well. See Pet. App. 4a, 23a.

<sup>&</sup>lt;sup>2</sup> Other claims in the patent application, along with the specification describing the process, referred to pH levels of 7.0 to 8.0. J.A. 76, 77.

<sup>&</sup>lt;sup>3</sup> The Booth patent disclosed an ultrafiltration process that "operates at a pH above 9 and preferably between 11 and 13." Pet. App. 4a; id. at 156a.

<sup>&</sup>lt;sup>4</sup> The language printed in italics in Claim 1 of this application (J.A. 90) was not part of this application but was added by hand in the PTO, after its rejection, to reflect Hilton Davis's subsequent amendments. Other claims in this second patent application, along with the specification describing the process, referred to pH levels of 5.0 to 8.0. J.A. 90.

out the 4 major differences between the claimed process and that of the Booth Patent. The examiner stated that if claim 1 were amended to contain the pH range of 6 to 9, the rejection on prior art would be overcome." J.A. 97. Hilton Davis, in its Record of Interview (J.A. 106-08), likewise noted that it had "pointed out four major points of difference" between its process and the Booth process, including: "the very high pH ranges deliberately sought in the Booth process, i.e., above 9.0 and preferably 11 to 13..., in contrast to the relatively low pH's used in the present process (i.e. from around 6 to around 9)." J.A. 107. Hilton Davis reported that the Examiner stated that he would reconsider the rejection "on presentation of such arguments, coupled with an amendment in Claim 1 inserting the pH range from 6 to 9." J.A. 107.

Hilton Davis submitted a Responsive Amendment on May 14, 1985. J.A. 99-105. The changes included amending its claim to call for "a pH from approximately 6.0 to 9.0." J.A. 99. Hilton Davis contended in the amending document that its process differed from the Booth process in several ways, including that the Booth process must "maintain the pH above 9" whereas its process operates "at much lower pH's, i.e. approximately 9 but preferably 6.0 to 8.0." J.A. 102.6 It added: "Nevertheless, in order to further highlight the process parameters of the instant process, and in accordance with the understanding reached at the interview, the pH range of 6.0 to 9.0 has been inserted in Claim 1 . . . . " J.A. 103. Hilton Davis explained that "the patentability of the instant process is submitted to rest on the novelty and the unobviousness of the process conditions." J.A. 103-04.

As a result of the amendment, the application was approved in June 1985. J.A. 109-10. The patent—U.S. Patent No. 4,560,746 (the '746 patent)—was issued

in December 1985. J.A. 8-38. Claim 1 of the patent—the independent claim governing the infringement question here—requires an aqueous solution "at a pH from approximately 6.0 to 9.0." J.A. 36-37.

The process that Osmonics developed for Warner-Jenkinson does not fall within the ranges specified by Hilton Davis for its process conditions in the '746 patent. As the Federal Circuit explained, "Warner-Jenkinson did not use precisely the claimed process parameters . . . ." Pet. App. 24a. Notably, Warner-Jenkinson's process operated at a pH of 5, which is ten times more acidic than Hilton Davis's process at a pH of 6.7 Moreover, Warner-Jenkinson developed its process entirely without knowledge of Hilton Davis's process or patent. As the Federal Circuit also explained, "Warner-Jenkinson did not learn of [Hilton Davis's] patent until October 1986, after it had begun commercial use of its ultrafiltration process to purify Red Dye #40." Pet. App. 5a (emphasis added); see J.A. 150-53 (sequence of events).

Upon learning of the '746 patent in October 1986, Warner-Jenkinson immediately consulted with its long-time patent counsel, who obtained from the PTO the patent file containing the documents quoted above. J.A. 131. Based on his reading of the patent claims and of the amendments made during the application process,

<sup>&</sup>lt;sup>5</sup> Dr. Wayne Cook, a co-inventor of Hilton Davis's process, "testified at trial that though the process would work to separate the dye from the impurities at pH-values as low as 2.0, a solution with a pH below 6.0 would cause 'tremendous foaming problems in the plant.'" Pet. App. 62a (Plager, J., dissenting) (quoting J.A. 111).

<sup>6</sup> Other claims in the patent, all of which are dependent on Claim 1, likewise refer to pH ranges of 6.0 to 8.0. J.A. 37. The specification states: "In carrying out the present process the reaction mix ture . . . generally has a pH of approximately 9.0. While these solutions can be subject successfully to ultrafiltration, it is preferred to adjust the pH to approximately 6.0 to 8.0 before passage through the ultrafiltration membrane." J.A. 22. See also J.A. 24 (describing pH adjustments to "6.5 to 6.7" and "6.0 to 8.0"), 28 ("9.3 to 9.5" and "8.5 to 9.0"), 29 ("8.4 to 9.0"; "6.5 to 6.7"; "6.0 to 8.0"), 34 ("9-11"; "6-7").

<sup>&</sup>lt;sup>7</sup> "Hilton Davis showed that Warner-Jenkinson's process operated at . . . a pH of 5." Pet. App. 4a. Because Warner-Jenkinson's process for making its dyes employed a different chemistry, it was able to operate at a pH below 6.0 to decompose a triazene impurity without causing the foaming problems noted by Dr. Cook. See, e.g., Pet. App. 86a (Nies, J., dissenting); note 5, supra.

particularly Hilton Davis's adoption of the limitation of pH to the range of 6.0 to 9.0, counsel advised that the patent (aside from being invalid) was not infringed by Warner-Jenkinson's process, with its pH of around 5. J.A. 125-36, 144-49. In particular, counsel stated his opinion that the process—operating, as it did, outside the ranges specified in the '746 patent—did not literally infringe the '746 patent and, in addition, could not be deemed to infringe under the "doctrine of equivalents" as set forth in Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), and various Federal Circuit decisions. J.A. 132, 147; see Pet. App. 87a (Nies, J., dissenting).

### **B.** District Court Proceedings

Hilton Davis brought this suit in 1991, alleging that Warner-Jenkinson had infringed the '746 patent. J.A. 6-7. Although it claimed at first that the process developed by Warner-Jenkinson literally infringed the patent claim, it expressly disavowed this argument before the district court-presumably because a pH of 5 is ten times more acidic than, not "approximately," a pH of 6 (the lower range of Hilton Davis's claim). C.A. Jt. App. 668 ("we are not asserting literal infringement in this case"). Hilton Davis continued to press arguments, however, that Warner-Jenkinson's process infringed under the doctrine of equivalents. That was the sole infringement issue submitted to the jury. See J.A. 59 ("Hilton Davis asserts that the Warner-Jenkinson process for making food dyes infringes the Hilton Davis patent under the doctrine of equivalents"; no instruction on literal infringement), 68-69.8 The jury found that Warner-Jenkinson infringed (J.A. 68-69) but not willfully (J.A. 69). It awarded damages of \$3,564,705. J.A. 69.

The district court subsequently denied a motion by Warner-Jenkinson for judgment as a matter of law. Pet.

App. 160a-67a, 170a-71a. Even though the '746 patent had been modified before the PTO to recite a process using "a pH of approximately 6.0 to 9.0," and even though Warner-Jenkinson's process used a pH outside that range, the court nevertheless held that the jury had sufficient evidence to conclude that the monopoly granted by the '746 patent extended, under the doctrine of equivalents, beyond the terms of its claims. Pet. App. 165a. As a result, in addition to the award of damages, it issued an injunction barring Warner-Jenkinson from employing its process with any pH below 9.01. Pet. App. 172a.

### C. Court of Appeals Decision

The Federal Circuit, sitting en banc, affirmed by a vote of 7-5. Pet. App. 1a-152a. The issues of validity and infringement were initially argued to a panel of that court, but, before it rendered a decision, the court decided to rehear the issues of infringement en banc (J.A. 4), in order "to consider the important issues raised concerning the doctrine of equivalents." Pet. App. 5a. Its efforts to resolve those issues produced five separate opinions.

The majority began by broadly stating that "[t]his case presents an opportunity to restate—not to revise—the test for infringement under the doctrine of equivalents." Pet. App. 6a. Observing that this Court had "mapped the modern contours of the doctrine of equivalents in its landmark Graver Tank decision" (Pet. App. 7a), the court then held that every patent holder could prove infringement simply by showing that, though the defendant's product or process was in fact different from the product or process claimed in the patent, the difference was "insubstantial." See Pet. App. 8a; id. at 9a ("this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes.

<sup>&</sup>lt;sup>8</sup> The instruction said: "You may find infringement under the doctrine of equivalents when the accused process and the claimed invention perform substantially the same function in substantially the same way to yield substantially the same result even though the processes differ in name, form or shape." J.A. 59.

The issue of validity later was assigned to the same panel, which held that the 746 patent was valid. Pet. App. 153a-59a. But see Pet. App. 90a-102a (Nies, J., dissenting). That ruling is not presented for review in this Court.

assessed according to an objective standard"). The court continued to endorse reliance on *Graver's* "function-way-result" formulation (Pet. App. 9a) but cautioned that "the function-way-result test may not invariably suffice to show the substantiality of the differences." Pet. App. 10a.<sup>10</sup>

The majority insisted, again relying on Graver, that "lack of substantial differences" (Pet. App. 13a) was itself always a sufficient condition for non-literal infringement; no additional requirements need be met. In particular, the court determined that, while the defendant's "copying" or "designing around" had an evidentiary bearing on the substantiality of differences, the fact that a defendant developed its product or process independently of the plaintiff's patent was not relevant. See Pet. App. 11a-14a. As a result, "those who make only insubstantial changes to a patented product or process are liable for infringement, regardless of their awareness of the patent and its disclosure." Pet. App. 14a. 11

The court next held that even when a patentee had narrowed its patent claims to exclude matter in order to win approval from the PTO, the doctrine of equivalents nevertheless could reach that surrendered matter, based on a judicial evaluation of the reason for the narrowing. See Pet. App. 24a-25a. Thus, Hilton Davis had explicitly narrowed its claimed process to recite "a pH from approximately 6.0 to 9.0." The court concluded that a process utilizing a pH of 5.0 was infringing because Hilton Davis

had amended its claim only "to avoid the disclosure in the Booth patent of an ultrafiltration process operating at a pH higher than 9." Pet. App. 24a; see also ibid. ("[t]his amendment surrendered pHs above 9, but does not bar Hilton Davis from asserting equivalency to processes... operating sometimes at a pH below 6").

In dissent, Judge Plager, noting that the doctrine of equivalents "is regularly used by patentees to seek greater coverage for their patents than the patent statute grants" (Pet. App. 53a), argued that the majority's doctrine "is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose," even "without regard to and independent of the express limitations of the patent claims which may have brought about their allowance by the [PTO] in the first place." Pet. App. 55a. The majority relied simply on Graver to address the inconsistency between the doctrine of equivalents and the statutory requirement of precise PTO-approved claims to define the patent monopoly. "According to Graver Tank, the 'theory on which [the doctrine of equivalents] is founded is that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." Pet. App. 26a (quoting Graver, 339 U.S. at 608 (internal quotes omitted) (emphasis added by Federal Circuit)).

Judge Lourie, in dissent, argued that "the substantiality of the differences [between the patented and accused processes] is still only one of the factors according to Graver." Pet. App. 74a. Stressing the doctrine's purpose "to defeat piracy" (Pet. App. 77a), he reasoned that the determination required consideration of other matters, e.g., whether the defendant intended to misappropriate, whether the defendant independently developed its product, whether the plaintiff failed to seek "reissue" from the PTO under 35 U.S.C. § 251 to correct unduly narrow claims. Pet. App. 74a-75a. But the majority rejected any limitations on its "insubstantial differences" test. Pet. App. 29a; see ibid. ("Infringement is, and should remain, a strict liability offense.").

This Court in Graver stated that, "when the proper circumstances for its application arise . . . a patentee may invoke [the doctrine of equivalents] to proceed against the producer of a device 'if it performs substantially the same function in substantially the same way to obtain the same result." 339 U.S. at 608, quoting Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929). The jury charge in this case made "function-way-result" the sole test. See note 8, supra.

<sup>&</sup>lt;sup>11</sup> Having deemed "lack of substantial differences" a necessary and sufficient condition for infringement, the court held that application of the doctrine of equivalents presented a factual question to be decided by a jury in damages cases. See Pet. App. 14a-18a.

Judge Nies, in dissent, explained the basic incompatibility of the doctrine of equivalents with the 1952 Act and stressed the ability of patentees to protect themselves in the patent-drafting process and to use the statutory process for reissue to correct errors of undue narrowness. Pet. App. 102a-04a. Judge Nies also emphasized that Hilton Davis should not be able to reclaim under the doctrine of equivalents what it had expressly surrendered before the PTO. Pet. App. 151a. But the majority held that the surrender was reversible based on a later judicial assessment of the "reasons" for the claim amendments before the PTO. Pet. App. 31a-32a.

A concurring opinion by Judge Newman expressed considerable doubt about the doctrine of equivalents, noting "the problems of application of the doctrine that have concerned this court" and the uncertainty created by Graver. Pet. App. 45a. Like Judge Lourie (Pet. App. 79a n.3) and Judge Plager (Pet. App. 56a), however, Judge Newman pointed to this Court as uniquely able to address these problems and the proper continuing force of Graver. Pet. App. 33a. This Court subsequently granted the petition for a writ of certiorari. J.A. 154.

#### SUMMARY OF ARGUMENT

The judgment of liability for non-literal infringement under the Patent Act, 35 U.S.C. §§ 271, 281, should be reversed. The Federal Circuit's broad standard cannot be squared with the statute. This Court's decision in Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), when read with the aim of reducing incompatibilities with the statute, supports at most a very narrow rule of non-literal infringement that clearly excludes liability here. And, if the Court were to address the ultimate question whether any non-literal infringement

is authorized by the 1952 Patent Act, the better answer is that it is not.

I. The broad standard adopted by the Federal Circuit is deeply and pervasively incompatible with core structural aspects of the Patent Act. First, it violates the longestablished principle, reflected in 35 U.S.C. § 112 (paragraph 2), that the outer limits of each patent monopoly must be defined with precision in the claims set forth in the patent. The Federal Circuit's "insubstantial differences" standard, in flouting that principle, deprives the public, including other firms and inventors, of the clear notice of patent boundaries that Congress has commanded. Second, the Federal Circuit's rule of non-literal infringement would violate the primacy accorded the PTO in the 1952 Act: it offers protection, through the courts, for a patent scope not approved by the PTO; and it overrides the designated process and standards-reissue of patents, 35 U.S.C. §§ 251-252-for correcting errors of undue narrowness. These basic structural incompatibilities were nowhere authorized by Congress. To the contrary, the specific provision for one form of "equivalents" protection for combination claims under 35 U.S.C. § 112 (paragraph 6) strongly negates any general "equivalents" rule of nonliteral infringement.

II. In support of its broad endorsement of a doctrine of equivalents, the court of appeals relied at every turn on the 1950 decision of this Court in Graver. But, even if Graver is controlling under the 1952 Act, it justifies nothing like the Federal Circuit's expansive standard. Rather, both in its reasoning and on its facts, the Graver decision is entirely consistent with a standard for non-literal infringement liability that is exceedingly narrow. First, such a standard must exclude any matter that the patentee surrendered in the application process, regardless of the reason for surrender: patentees can protect themselves against unjustified surrenders; and the public must be able to rely on the record of actual surrender without the uncertainty introduced by allowing a later judicial reevaluation of the reason. Second, any such narrowed

<sup>12</sup> Judge Nies noted, however, that because the statutory procedure for reissue carries time limits and specifically allows competitors to invoke "intervening rights," "[t]he patentee is much better off evading the reissue procedure which Congress had provided, and resorting to its counterpart, the doctrine of equivalents, created out of the judiciary's sense of 'fairness.'" Pet. App. 103a-04a.

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ARGUMENT

standard for non-literal infringement should reach at most only those few matters that were not only known to be equivalent, but were disclosed in the patent as equivalent, to the patent's valid claims. Those sharply limiting conditions are consistent with *Graver*, are amply supported in precedent, reduce the impairment of the 1952 statutory scheme, and give effect to the core statutory policies that protection is available only for advances in knowledge disclosed in the patent. And this standard readily resolves this case, because Hilton Davis, far from knowing or disclosing that its process would work equivalently with pH values of around 5, actually surrendered such coverage in securing the patent.

III. There is good reason, however, to question whether this Court should, in construing the 1952 Act, follow Graver at all, even in its proper, narrower reading. At bottom, we submit, there is ultimately no fair resolution of the logical incompatibility between the patent scheme Congress created and any standard of non-literal infringement. There is no evidence of actual congressional intent to carry forward Graver or to create this incompatibility. Nor does a pure policy argument justify a doctrine of equivalents: such a doctrine responds to a real concern, but there are obviously strong offsetting policy concerns; and while that policy balance might be struck in different places, there is simply no basis for the courts to conclude that Congress must have intended the policy balance to be struck in a way that contradicts the evident meaning of the statute it enacted. Thus, there is no sufficient reason in policy, including in any reliance interests, for reading the 1952 Act as silently incorporating such a standard. A clean abandonment of the "doctrine of equivalents" would restore the statute's commitment to clear, reliable boundaries for patent monopolies set by agency-approved patent claims.

I. A STANDARD OF NON-LITERAL INFRINGEMENT BASED ON MERE LACK OF "SUBSTANTIAL" DIFFERENCES IS FUNDAMENTALLY INCOM-PATIBLE WITH THE 1962 PATENT ACT

The Federal Circuit held that there are two forms of patent infringement: any patentee can establish infringement either by showing that the defendant's product or process comes within the scope of the plaintiff's patent claims, properly construed, or by showing simply that, even where there is concededly no literal coverage, "the differences between the claimed and accused products or processes are insubstantial." Pet. App. 7a. The result is that the boundaries of each particular patent monopoly, extending somewhere beyond the scope set by the patent claims approved by the PTO, cannot be known in advance but are effectively determined in infringement litigation (by juries in damages suits, Pet. App. 17a). This standard of non-literal infringement is inconsistent with the fundamental choices Congress made about patent protection throughout the 1952 Patent Act.

A. An "Insubstantial Differences" Infringement Standard Is Inconsistent With the Statutorily Prescribed Role of Claims in Setting Clear Outer Limits on the Scope of Patent Monopolies

A patentee's cause of action for infringement is limited to what is found in 35 U.S.C. §§ 271 and 281. See Deepsouth Packing Co. v. Laitram Corp., 406 U.S. 518, 526 n.8 (1972); Brown v. Duchesne, 60 U.S. (19 How.) 183, 195 (1857). Section 281 creates a cause of action for "infringement." 35 U.S.C. § 281. Section 271 defines "infringement" to mean the unauthorized using (among other actions) of "any patented invention" (35 U.S.C. § 271(a)), mirroring Section 154's declaration that a patent grants the right to "exclude others from . . . using . . . the invention." 35 U.S.C. § 154(a)(1). Infringement thus is coincident with the scope of the "invention" for which the statute grants a monopoly.

What is protected by the patent monopoly is, under the text of the statute and long-established precedent and policy, only that which is clearly defined in the patent claims. The Federal Circuit's doctrine of equivalents violates both aspects of that principle. By definition, it enlarges the protected monopoly of every patent beyond the patent claims (otherwise, the case would be one of literal infringement). And it defeats the requirement of precise claims that furnish clear public notice of the boundaries of patent monopolies.

1. Both of these requirements are found in Section 112, which governs the "specification" that makes up the bulk of a patent application. That provision first requires the applicant to provide a sufficiently detailed description of the invention to enable others to understand and reproduce it. 35 U.S.C. § 112 (paragraph 1). See J.A. 13-35 (patent at issue here). It then requires, in a separate paragraph, that the patent applicant conclude its specification "with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 (paragraph 2) (emphasis added); see J.A. 36-38 ("We claim," followed by 17 claims). This requirement, whose violation is explicitly made a ground for invalidity of the patent (35 U.S.C. § 282(3)), demands "'precision and definiteness of claim language'": "the claims must clearly set forth the area over which the applicant seeks exclusive rights." 2 D. Chisum, Patents § 8.03[2], at 8-24, 8-21 (1995) (quoting In re Borkowski, 422 F.2d 904, 909 (C.C.P.A. 1970)).

The provision's demand for precision is apparent in the "distinctly claiming" requirement. And the monopoly-defining character of the claim follows not only from the requirement of precision—why insist on precision of limits if the limits may be exceeded in litigation?—but also from the interaction of the claiming requirement with other statutory provisions. Section 112 (paragraph 2) by its terms states that the claims in the application set forth what the patentee is alleging to be his or her "in-

vention." Under Section 131, the PTO must examine "the application and the alleged new invention," and, if patentability requirements are met, the PTO must "issue a patent therefor." 35 U.S.C. § 131 (emphasis added). The patent claims, written by the patentee (originally and through amendments, 35 U.S.C. §§ 131-132), thus define what the patent is issued for. Indeed, the claims become "part of such patent." 35 U.S.C. § 154(a)(4). See also PTO, Manual of Patent Examining Procedure § 608.01(k) (6th ed. 1995) (the claim "is the definition of that for which protection is granted"); id. § 806.04(e) ("Claims are definitions of inventions.").

2. Section 112 (paragraph 2) was a slight rewording of the requirement of a separate "claim" that was first stated definitively in the Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 203, after a less distinct reference to what the patentee "claims" appeared in the Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119. See Pet. App. 26a (quoting statutes). Before the late 1870s, and on occasions for some years afterward, the patent cases coming before this Court involved "claims" that were not required or understood to provide, and did not in fact provide, a precise delineation of the invention: as in the key decision from which Graver traced the doctrine of equivalents, Winans v. Denmead, 56 U.S. (15 How.) 330 (1854), the "claims" often were only brief and uninformative references to an invention "substantially as . . . described" elsewhere in the patent (id. at 342).38 Under that norm

Another key decision, Machine Co. v. Murphy, 97 U.S. (7 Otto) 120 (1878), also involved a patent issued before the 1870 Act (see Pet. App. 27a), and this Court, without even quoting the claim, described it in one cursory sentence. 97 U.S. at 122. For other examples of claims from the era, see, e.g., Goodyear Dental Vulcanite Co. v. Davis, 102 U.S. (12 Otto) 222, 223 (1880) (claim: "The plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described."); Silsby v. Foote, 55 U.S. (14 How.) 218, 226 (1853) (claim: "I also claim the combination above described, by which the regulation of the heat of the stove, or other structure in which it may be used, is effected.").

of patent drafting, the claims could not logically or practically be treated as defining the protected invention; instead, the outer reaches of the patent monopoly had to be determined by the courts in litigation, and those boundaries were then attributed to the patentee as what he or she "is understood to intend to claim." Id. at 342; see Pet. App. 110a-16a (Nies, J., dissenting). But in the late 1870s, this Court insisted on a different role for patent claims, and then repeatedly made clear the dual meaning of the requirement for separate, distinct claims: they define the limits of patent monopolies and must be precise to afford clear public notice of those boundaries. In Merrill v. Yeomans, 94 U.S. (4 Otto) 568, 573

(1877), the Court explained:

The growth of the patent system in the last quarter of a century in this country has reached a stage in its progress where the variety and magnitude of the interests involved require accuracy, precision, and care in the preparation of all the papers on which the patent is founded. . . . [Patent law principles] leave no excuse for ambiguous language or vague descriptions. The public should not be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights. The genius of the inventor, constantly making improvements in existing patents,—a process which gives to the patent system its greatest value,-should not be restrained by vague and indefinite descriptions of claims in existing patents from the salutary and necessary right of improving on that which has already been invented. It seems to us that nothing can be more

just and fair, both to the patentee and to the public, than that the former should understand, and correctly describe, just what he has invented, and for what he claims a patent.

In Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. (5 Otto) 274, 278-79 (1877), the Court explained that "the courts cannot alter or enlarge" patent claims and that, even in the 1836 Act, the objective was to "relieve[] the courts from the duty of ascertaining the exact invention of the patentee."

This duty is now cast upon the Patent Office. There his claim is, or is supposed to be, examined, scrutinized, limited, and made to conform to what he is entitled to. If the office refuses to allow him all that he asks, he has an appeal. But the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office, or the appellate tribunal to which contested applications are referred. When the terms of a claim in a patent are clear and distinct (as they always should be), the patentee, in a suit brought upon the patent, is bound by it. Merrill v. Yeomans, 94 U.S. 568. He can claim nothing beyond it. . . . As patents are procured ex parte, the public is not bound by them, but the patentees are. And the latter cannot show that their invention is broader than the terms of their claim; or, if broader, they must be held to have surrendered the surplus to the public.

The Court said in Burns v. Meyers, 100 U.S. (10 Otto) 671, 672 (1880), that courts must be "careful not to enlarge, by construction, the claim which the Patent Office has admitted, and which the patentee has acquiesced in, beyond the fair interpretation of its terms." In Mahn v. Harwood, 112 U.S. 354, 361 (1884), the Court explained:

The public is notified and informed by the most solemn act on the part of the patentee, that his claim to invention is for such and such an element or combination and for nothing more. Of course,

<sup>&</sup>lt;sup>14</sup> See Woodward, Definiteness and Particularity in Patent Claims, 46 Mich. L. Rev. 755, 758-64 (1948); Hantman, Doctrine of Equivalents, 70 J. Pat. & Trademark Off. Soc'y 511, 522 (1988); Lutz, Evolution of the Claims of U.S. Patents, 20 J. Pat. Off. Soc'y 134, 377, 457 (1938). As the Federal Circuit observed, the 1870 Act is often identified as the "advent of peripheral claiming" (Pet. App. 27a), with the claim understood to define the outer periphery of the patent monopoly, in contrast to the earlier system of "central claiming," with the claim understood to point only to the core of the protected area. See Pet. App. 114a-15a (Nies, J., dissenting).

what is not claimed is public property. The presumption is, and such is generally the fact, that what is not claimed was not invented by the patentee, but was known and used before he made his invention. But, whether so or not, his own act has made it public property if it was not so before. The patent itself, as soon as it is issued, is the evidence of this. The public has the undoubted right to use and it is to be presumed does use what is not specifically claimed in the patent.

In White v. Dunbar, 119 U.S. 47, 52 (1886), the Court explained that the statute's "very purpose" in requiring a claim was to "make the patentee define precisely what his invention is; and it is unjust to the public, as well as an evasion of the law, to construe it in a manner different from the plain import of its terms." See also McClain v. Ortmayer, 141 U.S. 419, 423-24 (1891):

While the patentee may have been unfortunate in the language he has chosen to express his actual invention, and may have been entitled to a broader claim, we are not at liberty, without running counter to the entire current of authority in this court, to construe such claims to include more than their language fairly imports. Nothing is better settled in the law of patents than that the patentee may claim the whole or only a part of his invention, and that if he only describe and claim a part, he is presumed to have abandoned the residue to the public.

In Cimiotti Unhairing Co. v. American Fur Ref. Co., 198 U.S. 399, 410 (1905), the Court again declared that "the inventor is at liberty to choose his own form of expression" and that courts "may not add to or detract from the claim." See also Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 419 (1908): "[T]he claims measure the invention. They may be explained and illustrated by the description. They cannot be enlarged by it." In 1917, the Court recited the "rules long established" (Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 510 (1917) (quoting Keystone)):

The scope of every patent is limited to the invention described in the claims contained in it, read in the light of the specification. These so mark where the progress claimed by the patent begins and where it ends that they have been aptly likened to the description in a deed, which sets the bounds to the grant which it contains. It is to the claims of every patent, therefore, that we must turn when we are seeking to determine what the invention is, the exclusive use of which is given to the inventor by the grant provided for by the statute,—'He can claim nothing beyond them.'

See also Mineral Separation, Ltd. v. Butte & Superior Mining Co., 250 U.S. 336, 347 (1919) (quoting White v. Dunbar, supra).

In the years leading up to the 1952 Patent Act, after one ambiguous ruling in 1929 (Sanitary Refrigerator Co. v. Winters, 280 U.S. 30; see note 30, Infra), the Court often restated these principles. In Permutit Co. v. Graver Corp., 284 U.S. 52, 60 (1931) (footnote omitted), the Court explained that the patentee not only must describe the invention to enable others to make it after expiration of the patent but must, during the life of the patent, "inform the public . . . of the limits of the monopoly asserted, so that it may be known which features may be safely used or manufactured without a license and which may not." In General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938) (footnotes omitted), the Court invalidated a patent claim for being insufficiently precise, relying on the above-quoted passages from Continental Bag and Permutit and adding:

Patents, whether basic or for improvements, must comply accurately and precisely with the statutory requirement as to claims of invention or discovery. The limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others, and the assurance that the subject of the patent will be dedicated ultimately to the public. The statute seeks to guard against unreasonable advantages to the patentee and disad-

vantages to others arising from uncertainty as to their rights.

See Milcor Steel Co. v. George A. Fuller Co., 316 U.S. 143, 145-46 (1942) (citing predecessor of Section 112 (paragraph 2)) ("claims . . . afford the measure of the grant to the patentee"). In United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942), the Court reiterated:

The statutory requirement of particularity and distinctness in claims is met only when they clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise. A zone of uncertainty which enterprise and experimentation may enter only at the risk of infring[ing] claims would discourage invention only a little less than unequivocal foreclosure of the field.

In Universal Oil Prods. Co. v. Globe Oil & Refining Co., 322 U.S. 471, 484 (1944), the Court said that one element of the "quid pro quo" for the patent monopoly is "precision of disclosure," which is needed "to warn the industry concerned of the precise scope of the monopoly asserted." And in the initial decision in the Graver case, Graver Tank & Mfg. Co. v. Linde Air Products Co., 336 U.S. 271, 277 (1949), the Court noted: "We have frequently held that it is the claim which measures the grant to the patentee."

3. The Federal Circuit's doctrine of equivalents—imposing strict liability for non-literal infringement—by definition expands the legally protected monopoly beyond the patent claim (properly construed) and undermines the longstanding statutory commitment to clear public notice of the scope of each patent monopoly. As Judge Learned Hand explained long ago, such a doctrine "violates in theory the underlying and necessary principle that the disclosure is open to the public save as the claim forbids, and that it is the claim and that alone which measures the monopoly." Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574, 575 (2d Cir. 1929), cert. denied, 281

U.S. 741 (1930). The United States explained this evident point in 1970: "The judicially-created doctrine of equivalents runs counter to the statutory requirement that the subject of a patent be precisely defined in the patent claims." Brief for United States as Amicus Curiae, in Standard Indus., Inc., v. Tigrett Indus., Inc., No. 445, October Term 1969, at 10-11. The Federal Circuit, in an earlier decision, articulated the point as well. Texas Instruments, Inc., v. United States Int'l Trade Comm'n, 805 F.2d 1558, 1572 (Fed. Cir. 1986) (doctrine "by its nature is inimical to the basic precept of patent law that the claims are the measure of the grant" and impairs the public's ability "to know the precise legal limits of patent protection without recourse to judicial ruling"). Simply, such a doctrine,

if applied broadly, can eviscerate both the claiming system and the goal of providing notice to the public of the scope of the patent. The doctrine achieves these results by enlarging, in an unpredictable way, the scope of the patent beyond the boundaries claimed by the applicant . . . .

Adelman & Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 680 (1989); see 4 D. Chisum, Patents, § 18.04[1][a][i], at 18-74 to 18-90.

This fundamental inconsistency cannot be denied or explained away by simply declaring that inventions that are no more than "equivalents" are actually "'the same.' "Pet. App. 30a (quoting Graver, 339 U.S. at 608). It is mere wordplay to say that a product or process falling outside the protection of "literal" infringement—precisely because it is different from the invention as set forth in the patent claim—is nevertheless the same as that invention. In so saying, the court is, by definition and in fact, doing nothing other than enlarging the claim beyond its meaning as properly construed. And it is defeating the fundamental purpose of modern patent claims: to give the public clear, reliable notice of the reach of the legal mo-

nopoly. This case is illustrative: the patent claim's clearly stated pH requirement of "approximately 6.0 to 9.0" was expanded (concededly beyond its meaning) to cover a pH of 5 (which is ten times as acidic) or even less. See Pet. App. 172a (injunction against any pH less than 9.01).

The uncertainty over the scope of patent monopolies created by the Federal Circuit's doctrine of equivalents not only fosters expensive, time-consuming, and risky litigation, but hampers subsequent inventors and competitors by curtailing their ability to know "which features may be safely used or manufactured without a license and which may not." *Permutit*, 284 U.S. at 60 (footnote omitted). Such a doctrine disables businesses from reliably knowing, and patent counsel from reliably discerning, what areas are foreclosed to them by patents. <sup>16</sup> Even

aside from the long line of authority quoted above, this Court has, in other contexts, stressed the requirement of the patent statute that "the metes and bounds" of a patent monopoly be "capable of precise delineation," without which "[i]t may engross a vast, unknown, and perhaps unknowable area." Brenner v. Manson, 383 U.S. 519, 534 (1966)."

Since 1952, Congress has confirmed its recognition that innovation may be harmed by uncertainty regarding patent rights and has taken steps to reduce it. In 1980, it enacted Public Law No. 96-517, 94 Stat. 3015, to create a new mechanism for administrative reexamination of patents (to redetermine their validity). 35 U.S.C. §§ 301-307. The relevant Committee Report explained that providing an efficient alternative to "expensive and lengthy infringement litigation . . . will promote industrial innovation by assuring the kind of certainty about patent validity which is a necessary ingredient of sound investment decisions." H.R. Rep. 96-1307, Part I, 96th Cong., 2d Sess. 4 (1980). Congress gave effect to the same policy judgment when, in 1982, it created the Federal Circuit and gave it exclusive jurisdiction over patent appeals. Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25. The evident reason was to "reduce costs to litigants" and "the judicial system," and to

<sup>16</sup> This inconsistency is highlighted by the jury's role in application of the Federal Circuit's doctrine of equivalents. If this Court were to hold in Markman v. Westview Instruments, Inc., No. 95-26 (argued Jan. 8, 1996), that judges rather than juries are to construe patent claims, so as to provide a uniform definition of the scope of the legally protected monopoly, it would seem at cross-purposes to say that juries may nonetheless expand the claims by resort to a broad notion of "equivalents."

<sup>16</sup> See, e.g., Malone, The Death of Invention, Best of Business Quarterly 17, 21 (Fall 1991) (statement of Silicon Valley patent counsel Roger Borovoy, recommending that courts "should simply abolish" the doctrine of equivalents, explaining: "It would save untold billions. My attitude is if you don't want that kind of infringement then, dammit, claim it right in the first place. Then if you wanted to find out if you were infringing on somebody else's patent, you could pay \$1.50 and know exactly. Right now, you go to an attorney and pay \$25,000 for an infringement opinion only to have him say, Well, on the one hand . . . but on the other hand. . . . ' The doctrine may have seemed like a good idea at the beginning, but it's expanded way beyond what's reasonable."); Larson, Balancing the Competing Policies Underlying the Doctrine of Equivalents in Patent Law, 21 Am. Intell. Prop. L. Ass'n Q.J. 1, 10-11 (1993) ("In the experience of the author, if an infringement issue requires consideration of the doctrine of equivalents, practicing lawyers find it extremely difficult, if not impossible, to predict whether a particular product will be found infringing by a court. The Federal Circuit has acknowledged that one who attempts to design around a patent rarely knows whether he is infringing

until a district court has decided the issue. Since a violation of patent rights carries serious consequences, the existing state of the law creates uncertainty for manufacturers who compete in product lines protected by patents.") (footnotes omitted); Adelman & Francione, 137 U. Pa. L. Rev. at 682-83 ("The doctrine of equivalents is the primary (although not the exclusive) cause of the current uncertainty surrounding the scope of patent claims. This uncertainty has serious consequences."; detailing adverse effects); J. Schlicher, Patent Law: Legal and Economic Principles §§ 7.02, at 7-3 to 7-12 (1993).

The Court noted the cost of uncertainty as to patent rights in Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation, 402 U.S. 313, 338, 342-43 (1971), and in Cardinal Chem. Co. v. Morton Int'l, Inc., 113 S. Ct. 1967, 1977-78 & n.24 (1993). See also Graham v. John Deere Co., 383 U.S. 1, 18 (1966) (noting the "definiteness which Congress called for in the 1952 Act").

accord "the businesses that rely on the patent system . . . more stable and predictable law . . . [to guide] investment in research and development[;] . . . it is important to those who must make these investment decisions that we decrease unnecessary uncertainties in the patent system." Sen. Rep. 97-275, 97th Cong., 1st Sess. 5-6 (1981) (internal quotation marks omitted); see H.R. Rep. 97-312, 97th Cong., 1st Sess. 21-23 (1981).

The uncertain broadening of patent rights authorized by the Federal Circuit's doctrine of equivalents is particularly out of keeping with the principles of the Patent Act because its effect is to enlarge the scope of a legal monopoly—which has long been treated as "anomalous" in our legal system. Blonder-Tongue, 402 U.S. at 342-43; see Cardinal Chem. Co., 113 S. Ct. at 1977. Thus, this Court has repeatedly held: "Since patents are privileges restrictive of a free economy, the rights which Congress has attached to them must be strictly construed so as not to derogate from the general law beyond the necessary requirements of the patent statute." United States v. Masonite Corp., 316 U.S. 265, 280 (1942); see Sears. Roebuck & Co. v. Stiffel Co., 376 U.S. 225, 230 (1964) ("the prerequisites to obtaining a patent are strictly observed, and when the patent has issued the limitations on its exercise are equally strictly enforced"); Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 151 (1989) ("free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception"); Deepsouth Packing Co., 406 U.S. at 530-31; Hartford-Empire Co. v. United States, 323 U.S. 386, 452-53 (1945) (Rutledge, J., dissenting). Unpredictable expansion of patent monopolies runs afoul of that background principle.

4. There is no evidence that Congress in 1952 intended any departure from the bedrock principles that had come to define the critical role of patent claims. In the Committee Report comment on Section 112 (paragraph 2), Congress characterized the claim as defining the invention. H.R. Rep. 1923, 82d Cong., 2d Sess. 19 (1952) ("The clause relating to the claim is made a separate

paragraph to emphasize the distinction between the description and the claim or definition . . . " (emphasis added)).16 And there is no apparent indication in the legislative history that Congress endorsed any doctrine

of equivalents as an infringement standard.

There is, in fact, textual indication to the contraryin Section 112 itself. In the last paragraph of Section 112 (now paragraph 6), Congress responded to this Court's restriction of patentees' ability to use "functional" language in claims, Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946), by specifically providing for a form of flexible claiming that incorporates a notion of "equivalents." See Patent Law Codification and Revision, Hearings Before Subcomm. No. 3 of the House Judiciary Comm., 82d Cong., 1st Sess. 45 (1951) ("1951 Hearing"). The provision allows the patentee to

<sup>18</sup> In hearings before the congressional subcommittee responsible for drafting the Patent Act of 1952, now-Judge Giles Rich-one of the drafters of the 1952 Act (see H.R. Rep. 1923, supra, at 4) and one of the dissenting judges in this case explained (without contradiction) what had come to be recognized as the basic role of the patent claim: "In the prosecution of a patent application, t' fight with the Patent Office always is how you are going to word the claims, because these claims define the monopoly, the exclusive right which the patent grants." Contributory Infringement, Hearings Before Subcomm. No. 4 of the House Judiciary Comm., 81st Cong., 1st Sess. 8-4 (1949). See also Contributory Infringement in Patents: Definition of Invention, Hearings Before the Subcomm. on Patents, Trademarks, and Copyrights of the House Judiciary Comm., 80th Cong., 2d Sees. 7 (1948): "Every patent, as you know. has one or more claims. In fact, each claim of a patent which has more than one claim can be considered as a separate patent. Those claims define the protection which the patent actually grants to the patentee. The specifications and the drawings describe what the inventor has done and what invention he has actually made. But notwithstanding what is described there, he is protected only in what is claimed. Now, the claims have been likened to a fence put around a field within which the patentee has protection and outside of which he has no protection. If accidentally, intentionally, or for any other reason this fence is put around a smaller area of territory than he is entitled to, he gets only what is within the fence. [¶] The Supreme Court has likened claims to a description of real property in terms of metes and bounds."

express an element in a claim for a combination as a means for performing a specified function (e.g., fastening) and declares that such a claim is properly construed to cover a particular device for doing so described in the specification (e.g., a snap) "and equivalents thereof." 35 U.S.C. § 112 (paragraph 6).

The normal inference as to the proper statutory interpretation is hard to avoid: inclusion of the flexible principle in this one section makes it inappropriate to read such a principle into other sections of the statute. See Custis v. United States, 114 S. Ct. 1732, 1736 (1994); Gozlon-Peretz v. United States, 498 U.S. 395, 404 (1991); Russello v. United States, 464 U.S. 16, 23 (1983). Any generally applicable doctrine of equivalents achieves for every patent the result—a flexible, "equivalents"-based definition of the scope of the protected monopoly-that Congress quite deliberately limited to the particular types of patents (combination patents) addressed by Section 112, paragraph 6. See 1951 Hearing at 45.20 Indeed, the sixth paragraph's negative implication for any more general doctrine of equivalents is conforced by the legislative history. In what apparently are the only two statements in the legislative history about the doctrine of equivalents-by the chairman of the House subcommittee responsible for the

preparation of the 1952 Patent Act and by the official presenting the views of the Department of Justice—the doctrine was specifically tied to this provision for combination claims.<sup>21</sup>

B. The "Insubstantial Differences" Standard Is Inconsistent With the Congressionally Prescribed Methods, Focusing on the Expert Patent and Trademark Office, for Defining and Correcting the Scope of Patent Monopolies

The Federal Circuit's doctrine of equivalents, in addition to depriving claims of their designated function of precisely defining the limits of patent monopolies, undermines a second fundamental element of the legal structure erected by Congress. It allows judges and juries in infringement litigation to enlarge the scope of a patent monopoly beyond what was approved by the PTO, thus overriding the primacy of the PTO's role in examining and approving the scope of the legally granted monopoly. And

may be construed to include equivalents to the specification, not expanded to equivalents of the claim. But the provision does allow the boundaries of the particular patent monopolies covered by it to be defined partly by a specific reference plus "equivalents."

For elements within combinations, flexibility may be thought to pose less of a threat to the general policy of clear and publicly known boundaries of patent monopolies. The overall combination of elements must itself be definite, and a combination already defines a narrowed field of monopoly: "no one is an infringer of a combination claim unless he uses all the elements thereof." Cimiotti Unhairing Co., 196 U.S. at 410 (emphasis added); see Deepsouth, 406 U.S. at 528. Allowing "equivalents" flexibility for an element within that narrowed field—and doing so as matter of construction of claims, not expansion—is less threatening of the statute's policy of clearly marked outer boundaries for legally protected monopolies: less area is walled off.

<sup>21</sup> In June 1951, the representative of the Department of Justice, whose assistance in drafting the bill was expressly recognized by the key House subcommittee (H.R. Rep. 1928, supra, at 3), testified to the House subcommittee in opposition to the new meansplus-function provision for combination claims. He stated that the provision "introduces into the statute for the first time the controversial doctrine of equivalents without defining its scope." 1951 Hearing at 95. In January 1952, months before the committee report of the patent code revision, Rep. Joseph R. Bryson, chairman of the subcommittee that was responsible for the bill, gave a speech to the Philadelphia Patent Law Association, reprinted in the Congressional Record, in which he said of this new meansplus-function paragraph of Section 112: "I should like to say a word on the provision in the bill for functional claiming. The subcommittee realizes that this will permit combination claims to be expressed functionally at the point of novelty. This provision in reality will give statutory sanction to combination claiming as it was understood before the Halliburton decision. All the elements of a combination now will be able to be claimed in terms of what they do as well as in terms of what they are. This has been strongly recommended by the patent bar and appears to us logically necessary if combination claiming is to be recognized as acceptable. This provision also gives recognition to the existence of the doctrine of equivalents." 98 Cong. Rec. A415, A416 (Jan. 28, 1952).

it provides for a corrective broadening of patent claims in disregard of the PTO-focused procedures, and substantive standards, specifically established by Congress for any such enlargement.

1. Unlike the Copyright Act, 17 U.S.C. §§ 101-702, the federal patent statute has since 1836 placed an expert administrative agency—the PTO (until 1975, the Patent Office)—at the center of the system for both granting and defining intellectual-property rights. To obtain patent rights, an individual must not only meet substantive requirements (35 U.S.C. §§ 100-105) but must file an application complying with detailed requirements, including Section 112's requirement for precise claims (35 U.S.C. §§ 111-122). The application is then subjected to agency examination to determine whether "the application is entitled to a patent under the law" (35 U.S.C. § 131), and adverse decisions are subject to review. 35 U.S.C. §§ 131-146. Ultimately, if all requirements are met, the PTO issues the patent. 35 U.S.C. §§ 151-157. Each claim of the resulting patent is, in any subsequent infringement litigation, given a presumption of validity. 35 U.S.C. § 282.

The Federal Circuit's doctrine of equivalents allows an end run around the PTO. "A broadly interpreted doctrine of equivalents erodes any administrative determination of patentability by expanding the scope of a claim beyond the administrative process to cover something that the PTO had not reviewed." Adelman & Francione, 137 U. Pa. L. Rev. at 705. This Court in Keystone Bridge, 95 U.S. at 278, explained that the very purpose of the 1836 Act's creation of the Patent Office was to shift "the duty of ascertaining the exact invention" out of the courts and into the Patent Office, where the patentee's "claim is, or is supposed to be, examined, scrutinized, limited, and

made to conform to what he is entitled to." The policy was not simply to lift a judicial burden but to demand preclearance by experts. Yet the doctrine of equivalents, by definition, gives to the patentee a legal monopoly "beyond the scope of its claim as allowed by the Patent Office." Ibid.

Indeed, the doctrine gives a presumption of validity (35 U.S.C. § 282) to coverage that the PTO has never reviewed and approved. And under the Federal Circuit's rule protecting matters actually surrendered at the behest of the PTO, the doctrine even grants protection for what the PTO has disallowed. A patentee's judicially sanctioned expansion of the protected area, in disregard of the limits set by the PTO, "is akin to a landowner moving his fence outward to expand his territory without consulting the land office (his grantor) as to his right to the added territory." Jessup, The Doctrine of Equivalents, 54 J. Pat. Off. Soc'y 248, 250 (1972).

2. The doctrine of equivalents not only authorizes disregard of the PTO's designated role in issuing the patent, but also bypass of the role Congress assigned to it for the specific purpose of correcting initial errors of undue narrowness. A patentee invoking the doctrine of equivalents is asserting nothing other than that the actual valid patent claims are somewhat too narrow to cover the "real" invention, as viewed by the patentee in hindsight. Yet Congress created a carefully crafted mechanism to address such an assertion: the reissue process. 35 U.S.C. §§ 251-252. The Federal Circuit's doctrine of equivalents (indeed, any such doctrine) allows "corrective" enlargement of patent claims without compliance with the conditions and procedures set forth by Congress for reissue.

<sup>&</sup>lt;sup>22</sup> As a practical matter, "the granting of a patent comes after a long and frequently difficult process of negotiation with the PTO. The PTO examines the putative invention and searches the prior art in order to determine whether the application for a patent meets the rigorous standards of patentability." Adelman & Francione, 137 U. Pa. L. Rev. at 704 (footnote omitted).

<sup>&</sup>lt;sup>23</sup> See Patent Act of 1836, § 7, 5 Stat. 120; Sen. Rep. Accompanying S. 239, 24th Cong., 1st Sess. (1836), reprinted in 6 D. Chisum, Patents, App. 12, at 12-4 to 12-5. Expertise in the examination process, which was the aim from the outset (id. at 12-6), has long been specified by statute. Patent Act of 1870, § 10, 16 Stat. 200; 35 U.S.C. §§ 7(a), 8. See also 35 U.S.C. § 31; 37 C.F.R. § 10.7 (expertise required for registration as attorney to prosecute patent applications).

Section 251 provides for the PTO to reissue a patent if, through "error," the patentee has claimed "less than he had a right to claim in the patent." 35 U.S.C. § 251. It is up to the PTO to ensure, however, that "Inlo new matter shall be introduced into the application for reissue." Ibid. And the statute sets a flat two-year limit on reissued patents "enlarging the scope of the claims of the original patent." Ibid. Beyond that, Section 252 carefully protects certain "intervening rights" of persons other than the patentee-persons who already had activities in progress that would run afoul of the reissued, but not the original, patent. 35 U.S.C. § 252. As long ago as 1877. this Court pointed to this reissue mechanism as the proper means for correction: "If the patentees have not claimed the whole of their invention, and the omission has been the result of inadvertence, they should have sought to correct the error by a surrender of their patent and an application for a reissue." Keystone Bridge, 95 U.S. at 278.

Expansion of claim scope by the doctrine of equivalents runs roughshod over the congressional requirements for reissue, as Judge Nies noted in dissent below. See note 12, supra. It bypasses the PTO; it allows (in the Federal Circuit's view) addition of "new matter" not disclosed in the patent; it requires (in the Federal Circuit's view) no "error" on the part of the patentee; it need not come within two years; and it leaves unprotected the intervening rights of those, like Warner-Jenkinson, who had made at least "substantial preparation" for using a process brought under protection by a reissue patent (35 U.S.C. § 252). In this respect, "the doctrine of equivalents is

nothing more than the circumvention of a statutory procedure . . . [and] of explicitly stated statutory protection for members of the public who may have relied on the original claims." Adelman & Francione, 137 U. Pa. L. Rev. at 716.

II. EVEN IF GRAVER IS CONTROLLING, ANY NON-LITERAL INFRINGEMENT SHOULD BE NAR-ROWLY LIMITED TO MATTERS THAT THE PAT-ENTEE ASSERTED (RATHER THAN SURREN-DERED) IN THE APPLICATION PROCESS AND DISCLOSED IN THE PATENT AS EQUIVALENT TO THE PATENT'S VALID CLAIMS

The Federal Circuit relied pervasively on this Court's 1950 decision in *Graver*. Even if that decision were a controlling precedent under the 1952 Patent Act, however, it would not support the Federal Circuit's broad holding that non-literal infringement is proved whenever lack of substantial differences is shown. *Graver* did not establish, and did not have to rely on, a broad doctrine of equivalents. And the overriding need to reduce, if not eliminate, the inconsistencies with the statutory scheme demands that *Graver* be read no more broadly than its facts and reasoning require. Such an approach suggests a very narrow doctrine that readily resolves this case.

## A. Graver Does Not Support the Federal Circuit's Broad Standard

In Graver, the respondent Linde Air Products owned a patent on an electric welding process and certain fluxes to be used in the process. 339 U.S. at 606. The patentee included certain broad claims describing the flux that referred to any "metallic silicate," and the specification identified several that worked equivalently, including magnesium and manganese. Linde Air Products Co. v. Graver Tank & Mfg. Co., 86 F. Supp. 191, 197, 198, 199 (N.D. Ind. 1947), rev'd in part, 167 F.2d 531 (7th Cir. 1948),

The reissue provisions of the 1952 Act provided expressly for broadening reissues, which had previously been recognized judicially (Topliff v. Topliff, 145 U.S. 156 (1892)), and laid down a bright-line two-year limit on broadening reissues, replacing the more flexible two-year timeliness rule that this Court had developed (see Miller v. Brass Co., 104 U.S. 350 (1882); Ives v. Sargent, 119 U.S. 652 (1887). See generally 4 D. Chisum, Patents § 15.02; H.R. Rep. 1923, supra, at 26.

<sup>&</sup>lt;sup>25</sup> In this case, for example, nothing in Hilton Davis's patent disclosed working processes using a pH below 6; and Warner-

Jenkinson was in commercial operation by the time it learned of Hilton Davis's patent. See page 5, supra.

rev'd in part, 336 U.S. 271 (1949) and 339 U.S. 605 (1950). This Court, like the district court (id. at 198-99), held those claims to be invalidly overbroad because they covered some substances that did not work. Graver Tank & Mfg. Co. v. Linde Air Products Co., 336 U.S. 271, 276-77 (1949). The patentee also included claims, however, that referred more specifically to "alkaline earth metal silicates," a class that includes magnesium but does not include manganese. 339 U.S. at 610; see 167 F.2d at 538 n.2. Those claims were sufficiently narrow to be valid. 336 U.S. at 275.

The infringement issue set for rehearing in this Court, and decided in the 1950 Graver opinion, arose because petitioners Graver Tank and Lincoln Electric used a flux that included manganese in place of magnesium. The manganese was outside the valid claims for "alkaline earth metal silicates," but it was claimed elsewhere in the patent (in the invalidly overbroad claims) and disclosed in the patent itself as equivalent. 339 U.S. at 610; 86 F. Supp. at 199. This Court held that the petitioners had infringed the valid claims. 339 U.S. at 610-12.

The Court quoted the "function-way-result" standard for determining equivalence that had been articulated in the Nineteenth Century. 339 U.S. at 608; see Machine Co., 97 U.S. at 125 ("one thing is substantially the same as another, if it performs substantially the same function in substantially the same way to obtain the same result"). But the Court in Graver, unlike the Federal Circuit in this case, nowhere held that satisfaction of that standard, or lack of "substantial differences," was by itself a sufficient condition for a finding of infringement. Rather, the Court described the doctrine as having evolved in response to the problem of the "unscrupulous copyist" and "pirate" (339 U.S. at 607); said that the doctrine is available "when the proper circumstances for its application arise" (id. at 608); and declared that the doctrine "is not the prisoner of a formula" (id. at 609). The Court also said that an "important factor" was whether skilled persons "would have known of the interchangeability" of ingredients (id. at 609), and the Court twice observed (id. at 611, 612) that, as far as the record revealed, the defendants had developed their product by "imitation" rather than "independent research" (id. at 612). Quite simply, Graver need not be read as holding any more than that insubstantial differences are a necessary condition for non-literal infringement, and it found such infringement only where important additional circumstances were present.

The critical facts that made the fairness concern so compelling to the Court in Graver are apparent. The defendants, engaging in "imitation rather than experimentation or invention" (339 U.S. at 612), adopted a product that the patentee had disclosed in its patent, and indeed had tried to claim, as equivalent to its valid claims, failing in the effort at coverage only because the defendants' product was included in separate claims that were subsequently held to be invalid for being excessively broad. See 4 D. Chisum, Patents § 18.02[2], at 18-14 (the patentee's equities in Graver rested on the fact that "the infringer's product used a species actually disclosed in the patentee's specification, a species that was literally covered by generic claims that were held invalid only because of undue breadth"); J. Schlicher, supra, § 7.04[17], at 7-79 (Graver approves non-literal infringement "when an inventor discloses the precise product made by the accused infringer, specifically claims that product, and those claims are declared invalid for reasons having nothing to do with whether the inventor was entitled to protection of a scope that included that product").26 Those facts and the Court's opinion in Graver suggest two principles that, taken together and treated as necessary requirements for any non-literal infringement over and above a finding of "insubstantial" differences, can diminish the impairment of

<sup>&</sup>lt;sup>26</sup> The patentee in *Graver*, which obtained approval for (later invalidated) broad claims, was subject to Patent Office rules, now defunct, that prohibited a patentee with such a "genus" claim from separately claiming more than three "species." See Pet. App. 137a n.28 (Nies, J., dissenting); 2 D. Chisum, Patents § 18.02[2], at 18-15.

statutory principles worked by any doctrine of equivalents. And these principles readily resolve this case.

> B. Non-Literal Infringement Should Not Extend to Any Matter Surrendered During the Patent Application Process, as Shown by the Patent File

Graver involved a situation where the patentee, far from giving up a matter in the process of prosecuting its patent application, affirmatively claimed this matter-failing in the end to gain literal protection for it only because the claim that included it turned out to be invalid as overbroad. The Court in Graver thus had no occasion to disturb, and did not disturb, a well-established limit on any non-literal infringement, variously known as "prosecution history estoppel" and "file wrapper estoppel." This Court stated the principle in Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136 (1942): "Whatever may be the appropriate scope and application of the doctrine of equivalents, where a claim is allowed without a restrictive amendment, it has long been settled that recourse may not be had to that doctrine to recapture claims which the patentee has surrendered by amendment." 27 In Exhibit Supply, an original application containing a more general and encompassing definition in the claim (any conductor "carried by the table") was narrowed by amendment in the prosecution of the patent application (to refer only to a conductor "embedded in the table"). The Court held: "By the amendment [the patentee] recognized and emphasized the difference between the two phrases and proclaimed his abandonment of all that is embraced in that difference. The difference which he thus disclaimed must be regarded as material, and since the amendment operates as a disclaimer of that

difference it must be strictly construed against him." 315 U.S. at 136-37.

The principle has long been applied and stated. In Graham v. John Deere Co., 383 U.S. at 33-34, the Court stated the same principle as a bar to broadening a claim by interpretation and noted the lineage of the principle:

claims that have been narrowed in order to obtain the issuance of a patent by distinguishing the prior art cannot be sustained to cover that which was previously by limitation eliminated from the patent. Powers-Kennedy Contracting Corp. v. Concrete Mixing & Conveying Co., 282 U.S. 175, 185-186 (1930); Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211, 220-221 (1940). [¶]Here, the patentee obtained his patent only by accepting the limitations imposed by the Examiner. The claims were carefully drafted to reflect these limitations and [the assignee of the patent] is not now free to assert a broader view of [the patentee's] invention.

Judge Learned Hand wrote in Strause Gas Iron Co. v. William M. Crane Co., 235 Fed. 126, 127-28 (2d Cir. 1916), that it was "the well-settled rule" that a patentee was bound by the limitation it wrote into its patent claim in the application process in order to satisfy the patent examiner, even if "it was not necessary" to have the limitation in order to have a valid claim. See also Hubbell v. United States, 179 U.S. 77, 80, 83-84 (1900) (the claim "cannot be so construed as to cover either what was rejected by the Patent Office or disclosed by prior devices" (emphasis added)); Pet. App. 130a-31a, 151a (Nies, J., dissenting) (citing additional decisions).

The deliberate surrender of a matter in the patent prosecution—here, pH ranges below "approximately 6.0" should preclude its protection under any standard of nonliteral infringement without regard to a later judicial inquiry into the "reason" for the surrender. Pet. App. 24a. This Court's precedents contain no such narrowing of this principle. And basic considerations of patent policy point strongly against introducing a "reason" inquiry into the

<sup>&</sup>lt;sup>27</sup> What was surrendered by amendment in the course of prosecuting the patent application is readily discovered because the PTO conducts all of its business with the public in writing and bases its decision on the written record (37 C.F.R. § 1.2) and the file is available to the public (37 C.F.R. § 1.11(a); see id. § 1.19 (fees)).

principle: it would undermine the public's ability to rely, if not on the patent *claim*, then on what is disclosed on the face of the patent file; and patentees are fully able to protect themselves in the application process, challenging limitations that are imposed without justification.

On the public's side of the equation, demanding a judicial inquiry into the reason for a limitation clearly adopted during the application process seriously increases uncertainty as to the scope of the patent monopoly. A determination as to what is within the protected monopoly cannot confidently be made if it depends not only on what the claims say, and on what limitations the patent file reveals were clearly added during the prosecution of the patent, but also on what a judge or jury in a subsequent infringement action will conclude about the "reason" for the limitations. Indeed, in this case, patent counsel reviewing the patent file-which reveals in the clearest terms that Hilton Davis inserted the pH range of 6.0 to 9.0 by amendment at the examiner's behest-concluded that Hilton Davis could not assert non-literal infringement to cover processes outside that range. J.A. 147. Yet the Federal Circuit, in a cursory reexamination, concluded that there was no sufficient "reason" for the limitation (Pet. App. 24a), despite the (unmentioned) "tremendous foaming problems" described by Hilton Davis's inventor (J.A. 111) and the fact that the patent's validity rested on "the particular combination" of process conditions, including pHs (Pet. App. 156a). The jury instruction confirms the unpredictability that accompanies the Federal Circuit's standard: the jury was directed to examine "not only what was surrendered, but also the reason for such a surrender" and told that explicit surrender

may have a limiting effect within a spectrum ranging from great to small to zero. Determination of the effect on the doctrine of equivalents from actions taken before the PTO requires consideration of the nature of such actions, the reasons therefore, the prior art distinguished, and the examiner's objections thereby overcome.

J.A. 60. A "reasons" standard utterly undermines the patent policy of clear public notice.

As for patentees, it makes sense to hold them to their deliberate surrenders-or, what amounts to the same thing, to presume conclusively that they do not surrender matters without reason. After all, patentees have every incentive to write claims as broadly as possible. See Brenner, 383 U.S. at 534 (referring to "the highly developed art of drafting patent claims so that they . . . broaden[] the scope of the claim as widely as possible"); R. Merges, Patent Law and Policy 11 (1992) ("The overall goal when drafting claims is to make them as broad as the Patent Office will allow."). Moreover, patentees, with their scientific expertise, are fully able to engage the expert examiners in any necessary discussion to explore whether matters do in fact have to be omitted from the patent claims. See J.A. 96-98, 106-08.88 Patentees also have recourse within the Patent and Trademark Office, and before the judiciary, if an examiner's restriction is too narrow. See 35 U.S.C. §§ 132, 134, 141, 145, And, when particular matters are the subject of an examiner's initial rejection and subsequent amendment, patentees should not be heard to deny that those matters were prominently in their attention. In that circumstance at least, there can be no justification for expanding the patent monopoly beyond the terms of the resulting claim to reach what was consciously foregone by the patentee.

Given that Hilton Davis's patent specification did not disclose that its process would actually work for any pH below 6, rejection by the PTO would have been the proper response if Hilton Davis had written claims to assert coverage for solutions with pH below 6: a patent may not cover more than what the patent shows actually to work. See 35 U.S.C. § 112 (paragraph 1) (enablement); Consolidated Elec. Light Co. v. McKeesport Light Co., 159 U.S. 465 (1895); O'Reilly v. Morse, 56 U.S. (15 How.) 62 (1854); 37 C.F.R. § 1.75(d) (1) (claim must "conform to the invention as set forth in the remainder of the specification"); 37 C.F.R. § 1.118(a) (prohibiting amendment of disclosure that introduces "new matter," "involving a departure from or an addition to the original disclosure").

Any non-literal infringement standard should also be subject to a second important limitation: a requirement that the patent itself (outside the valid claims) disclose the equivalence later asserted in the infringement suit. This limit, starting with a focus on equivalence known at the time of the patent and going one step further to require actual disclosure by the patentee, is consistent with Graver and serves basic patent policies. The obligation to diminish the degree of incompatibility between any non-literal infringement standard and the statutory struc-

ture supports adoption of this requirement.

1. A focus on what was known to be equivalent at the time of the patent dates back to the Nineteenth Century era in which the doctrine of equivalents originated. The Court held in 1872 that, if the change introduced by the defendant's product or process was not known to be equivalent to the patent claim at the time the patent issued, there can be no infringement. See Gould v. Rees, 82 U.S. 187, 194 (1872) ("an alteration in a patented combination which merely substitutes another old ingredient for one of the ingredients in the patented combination is an infringement of the patent, if the substitute performs the same function and was well known at the date of the patent as a proper substitute for the omitted ingredient, but the rule is otherwise if the ingredient substituted was a new one, or performs a substantially different function, or was not known at the date of the plaintiff's patent as a proper substitute") (emphasis added). See Gill v. Wells, 89 U.S. (22 Wall.) 1, 28-30 (1874); Pet. App. 126a-30a (Nies, J., dissenting). Graver itself stressed this factor. 339 U.S. at 609 ("An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent [i.e., valid patent claims] with one that was.").

Basic patent policy supports this requirement. What is not immediately and widely known (in the relevant art) to

be equivalent to the claimed invention falls outside the statute's fundamental limit restricting protection to the advances in knowledge made by the patentee, as demanded by the novelty and nonobviousness requirements, 35 U.S.C. §§ 101-103. It is the defendant, not the plaintiff patentee, who has made an advance in knowledge when an equivalent is discovered that is not covered by, or known to be equivalent to, the patent claim. Giving exclusive patent rights to the plaintiff in this circumstance would reward the wrong person and would, indeed, disserve the patent system's goal by depriving defendants of the fruits of what they have discovered (an equivalent).

2. Beyond a contemporaneous-knowledge requirement, a demand that the patent itself have disclosed the equivalence finds support in the facts and in much of the language in Graver. The Court pointed out the doctrine's targeting of "the unscrupulous copyist" and the "pirate" (339 U.S. at 607), terms that presume a defendant's having taken its idea from the plaintiff's patent. The Court also stressed repeatedly that "the record contains no evidence of any kind to show that [the defendants' product] was developed as the result of independent research or experiments" (id. at 611), including in the final paragraph summarizing why it was "difficult to conceive of a case more appropriate for application of the doctrine of equivalents." Id. at 612 ("imitation rather than experimentation or invention"). This point had likewise been emphasized in the brief discussion of infringement in the first Graver opinion. 336 U.S. at 276 ("The petitioners introduced no evidence to show that their accused [product] was derived either from the prior art, by independent experiment or from any source other than the teachings of the patent in suit." (emphasis added)). And, as the dissent in Graver observed, the trial court had rested its finding of infringement on the ground that the plaintiff's patent itself showed the equivalence of what the defendants then produced. 339 U.S. at 613. The core fairness concern animating Graver, the most compelling explanation of its departure from decades of insistence on claim precision and PTO

primacy (as argued in the dissent), seems to turn on this fact. See Pet. App. 142a (Nies, J., dissenting).

This sharp limitation on any non-literal infringement

thus comports with Graver when read with an eye toward reducing the scope of any impairment of the statutory policies of claim precision and agency primacy in patenting. Requiring actual disclosure of the equivalence in the patent also gives effect to both the basic policy of the patent laws and the "equitable" basis of the doctrine of equivalents (Pet. App. 15a-16a). If the defendant's product or process is not disclosed in the patent, that product or process falls outside the basic bargain of the patent statute: monopoly in exchange for disclosure. See Bonito Boats, Inc., 489 U.S. at 150, 159 ("the bargain held out by the federal patent system of disclosure in exchange for exclusive use"); 35 U.S.C. § 112 (paragraph 1) (enablement).

So, too, a standard requiring no more than contemporaneous knowledge of equivalence often would engender precisely the sort of costly litigation disfavored under the statute. A requirement of actual disclosure in the patent would sharply reduce proof problems on the issue. And, today, if there is a known equivalence that the patentee, with his or her available expertise, has failed to disclose in the patent despite the ability to do so (compare note 26, supra), there is hardly anything equitable about giving the patentee exclusive control over the defendant's right to use the undisclosed idea. In light of the strong statutory policy of clarity of patent boundaries, no broader standard of non-literal infringement should be allowed.29

3. These requirements readily resolve this case. Warner-Jenkinson's use of a pH of 5 in place of Hilton Davis's required pH of 6 was not simply the "interchang[ing]" of an "ingredient" (Graver, 339 U.S. at 609)-much less one that was well known to be equivalent to Hilton Davis's prescribed process. Whereas in Graver the substitution of manganese (outside the valid claim) for magnesium (within the valid claim) was a well-known equivalence. here the "tremendous foaming problems" encountered by Hilton Davis at lower pH levels (J.A. 111) indicate that it was not well known that its process would function equivalently at lower levels. And whereas the patent in Graver disclosed the manganese-magnesium equivalence, Hilton Davis's patent at no point discloses that its process would, at a pH of 5, be equivalent to the process it identified throughout its patent-in claims and specificationsas operating at pH levels of 6 or above. See Pet. App. 147a (Nies, J., dissenting). Indeed, Warner-Jenkinson, hardly a "pirate," developed its process by independent experimentation, not by imitation.

## III. THE 1952 PATENT ACT IS BEST READ AS NOT INCORPORATING ANY DOCTRINE OF EQUIVA-LENTS CREATING LIABILITY FOR NON-LITERAL INFRINGEMENT

This case can be resolved without reaching the fundamental question whether the 1952 Patent Act recognizes any standard for non-literal infringement. And the incompatibility between the statute and any such standard would be substantially reduced, though not eliminated, by the narrow standard set forth above. But the logical implication of that incompatability points to abandonment of the doctrine altogether. In the end, neither the precedential force of Graver nor the policy appeal of a flexible infringement standard for isolated cases pro-

<sup>20</sup> A standard of non-literal infringement that looked to whether defendants actually or presumptively took their idea from the patent would directly reflect the "piracy" and "equity" interests expressed in Graver. See Pet. App. 78a-79a (Lourie, J., dissenting). To the extent that such a standard protected defendants who developed their product or process prior to the plaintiff's patent, it would find support in an analogy to the statute's protection, in the reissue process, of the "intervening rights" of defendants

whose work preceded a broadening reissue patent. 35 U.S.C. § 252; Pet. App. 104a (Nies, J., dissenting). The strict disclosure requirement suggested in the text avoids any non-uniformity of patent rights and potential difficulties of proof that might accompany various defendant-specific standards.

vides a sufficient reason for reading the 1952 Act silently to incorporate any doctrine of equivalents.

## A. Any Non-Literal Infringement Is Inconsistent With the 1952 Act

Any standard of non-literal infringement is inconsistent with the whole structure of the Patent Act, with its requirement of precisely drawn claims defining the outer boundaries of the protected monopoly, after approval (initially or on reissue) by the PTO. Practically, the degree of inconsistency may be lessened; but by definition, allowing non-literal infringement expands claims, bypasses PTO processes and reissue limits, and heightens uncertainty about the scope of patent monopolies. And this evident contradiction is by no means unavoidably present in the statute. There is nothing whatever in the 1952 Act, or in any legislative history, endorsing Graver or otherwise indicating that the standard for infringement protects a patent monopoly defined with reference to "equivalents," beyond the properly construed meaning of the patent claims. To the contrary, the limited provision for certain combination claims, 35 U.S.C. § 112 (paragraph 6), and its legislative history strongly indicate the absence of any general doctrine of equivalents.

## B. Silent Incorporation of Graver Should Not Be Attributed to Congress

The legal argument that the 1952 Patent Act permits any non-literal infringement, then, rests entirely on the pre-1952 precedent of Graver (and its predecessors). More particularly, the argument relies wholly on a legal presumption—the presumption that a law designed substantially (even though not entirely) to codify and restate prior law generally is understood to incorporate then-existing judicial interpretations. See, e.g., Davis v. United States, 495 U.S. 472, 482 (1990); Pierce v. Underwood, 487 U.S. 552, 566-68 (1988). But that presumption does not sensibly apply where it would produce a fundamental and otherwise-unsupported incoherence in the resulting statute. Without evidence that Congress

actually intended a deep internal inconsistency, it makes little sense to hold that the principles that Congress clearly has enacted must give way to principles merely attributed to Congress, as a legal matter, by a background rule of

construction for resolving interpretive issues.

Relatedly, this Court has made clear that the legal presumption of congressional ratification of pre-enactment case law does not apply where the judicial interpretations in the area do not present a "uniform" and "settled construction." Fogerty v. Fantasy, Inc., 114 S. Ct. 1023, 1032-33 (1994). In the present case, Graver's affirmation of a doctrine of equivalents stands in unavoidable and well-recognized tension with the long line of this Court's decisions declaring that the boundaries of patent monopolies are determined by the precise patent claims approved by the expert agency. See pages 16-20, supra. The situation facing the 1952 Congress, then, was at best one of two mutually inconsistent lines of authority on the problem. And, in fact, the lines of authority,

though opposite, were hardly equal.

By 1952 it was well recognized that any doctrine of equivalents was anomalous in the setting of the commitment of patent law, since at least the turn of the Century, to a regime of precise definition of patent monopolies by the claims approved by the Patent Office. In 1936, a commentator wrote: "The Doctrine of Equivalents Has Been Nullified. . . . [W]ith the development of the American concept of the peripheral claim, and more specifically, of the combination type of claim, the doctrine of equivalents has become completely lost, so far as being of any benefit to the patentee is concerned." Dienner, Claims of Patents, 18 J. Pat. Off. Soc'y 389, 403 (1936). In 1942, this Court put off deciding, rather than rejecting, the contention that the doctrine should be discarded as "incompatible with the statutory requirements for the grant of a patent and with the doctrine that the patent claims measure the patented invention." Exhibit Supply, 315 U.S. at 131-32. In 1950, between this Court's first and second opinions in Graver, a commentator explained how ill-fitting the doctrine had become

in modern patent law: "the doctrine of equivalents in its [claim-broadening] application is logically inconsistent with the function of the claim as the measure of the grant to the patentee, finds only meager support in modern Supreme Court precedents, is opposed to the policy of informing the public of the exact limits of the granted monopoly, and runs counter to the Court's tendency to limit patent monopolies as being inconsistent with the policy of the anti-trust laws." Tilton, The Doctrine of Equivalents in Patent Cases, 32 J. Pat. Off. Soc'y 861, 869 (1950). After Graver was decided, but before the 1952 Act was enacted, a commentator recounted specifically the dearth of modern precedent for the doctrine: "No case other than the Sanitary Refrigerator Co. v. Winters case [in 1929] has been found since the year 1892, in which the Supreme Court has used the Doctrine of Equivalents as a tool for expanding the language of a claim." Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y 19, 29-30 (1951); see Tilton, 32 J. Pat. Off. Soc'y at 867. The situation was summed up by one commentator in 1948:

In this country, the claims are regarded as definitions of the invention, rather than mere guides to its scope. There are a few decisions—which treat the question of infringement merely as whether or not the defendant's accused devices or activities accomplish substantially the same result by substantially the same means as shown in the patent as a whole, irrespective of the terms of the claims. But since the entire logic of the development of the patent system has been to limit the patent owner more and more to those terms, the Bar has long been chary of attaching much weight

to the possibility of any particular patent having force beyond the terms of its claims.

Woodward, 46 Mich. L. Rev. at 757. See Pet. App. 124a (Nies, J., dissenting).

As we have noted, taking the claims as a mere starting point was natural, and indeed inevitable, in the era of "central claiming" that gave rise to the doctrine, when claims were broadly drafted and included phrases such as "substantially as described" that called for an inquiry into "equivalents" merely as a matter of construction. But with the often-repeated insistence on, and ingrained acceptance of, a defining character for patent claims, the doctrine of equivalents as a tool for expanding patent monopolies became anomalous. By the late 1940s it could easily be noted that it "is hard to reconcile" the doctrine of equivalents with the "undoubted authority" of the principle that definite claims set the outer reaches of patent monopolies. Woodward, 46 Mich. L. Rev. at 763. In these circumstances, the usual presumption of incorporation of pre-existing case law carries little weight as applied to Graver.31

<sup>&</sup>lt;sup>30</sup> The 1929 decision in Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, was an ambiguous precedent for such expansion. The Court's opinion nowhere says that it is doing anything but construing the claim. And the defendant's product, in fact, appears to have come within one of the patent claims. See Hantman, 70 J. Pat. & Trademark Off. Soc'y at 539 (defendant's latch mechanism falls under the general language of Claim 7 of the patent at issue).

<sup>31</sup> The so-called "reverse doctrine of equivalents" -- which sometimes refuses to find infringement despite literal coverage by patent claims with comparatively broad wording (Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537 (1898))-raises overlapping but somewhat different considerations in any statutory analysis. In particular, narrowing rather than expanding protection preserves claims (drafted in the ex parte process before the PTO) as the outer limits of the protected monopoly; works in line with, rather than against, the basic principle of confining the scope of exceptions to the general rule of free competition; and attempts to confine the patent monopoly to what the patentee has actually invented, as later understood. The question how these or other considerations (such as the reexamination process, 35 U.S.C. §§ 301-307) affect the validity of such a limitation on literal infringement-which is not often used successfully (Pet. App. 140a n.30 (Nies, J., dissenting); Ethyl Molded Prods. Co. v. Betts Packaging Inc., 9 U.S.P.Q.2d 1001, 1026 (E.D. Ky. 1988) (doctrine never applied by Federal Circuit))-is not presented in this case, which involves the expansion of patent rights through allowing non-literal infringement.

## C. No Overriding and Authoritative Policy Supports Non-Literal Infringement

It can hardly be denied that, as a pure policy matter, the notion of a flexible infringement standard responds to a real concern. Without a doubt, predictable imperfections of drafting mean that an insistence on confining patent protection to the patent claims (as construed) could produce results in some cases that, in isolation, might seem to afford too little protection. But for this policy observation even to begin to be transformed into a legal argument, the point would have to be so compelling—not only by itself, but weighed against competing policy concerns—that the policy balance would so decisively tilt in favor of a flexible infringement standard that an intent to adopt such a standard could be attributed to Congress in evident contradiction of the choices reflected in the statutory structure. We see no basis for such a determination.

On the patentee side of the balance, the basic facts are that patentees have drafting power in their own hands and are entitled in any infringement litigation to a fair construction of their claims, taking into account other claims, the specification, the prosecution history, prior art, and any needed additional evidence about how the relevant scientific community understands the terms in context, See, e.g., Graham, 383 U.S. at 33; Winans v. New York & E.R.R., 62 U.S. (21 How.) 88, 100-01 (1859). As indicated in this case, the patent claim is permitted to have some measure of flexibility built into it ("approximately" 6 to 9 on the pH scale), though the measure of flexibility is subject to the expert judgment of the PTO. Combination claims are permitted an added measure of flexibility under Section 112 (paragraph 6). And reissue is available to correct mistakes in proper circumstances. These mechanisms of self-protection temper, if they do not eliminate. any pragmatic (and unmeasurable) concerns about "underprotection" through literal infringement.

There is, moreover, a weighty and familiar other side to the balance. "Overprotection" of patents has real, wellestablished costs, as does uncertainty created by safety

valves of unpredictable scope. Patent law seeks to encourage invention through economic reward, but "more protection is better" is not the policy of the Patent Act. Thus, the Act does not bar all economic substitutes so as to preserve the monopoly reward of the inventor, even during the limited (now 20-year) period of a patent (35) U.S.C. §154(a)(2)); to the contrary, as the Federal Circuit observed (Pet. App. 13a), patent policy encourages "designing around," i.e., the finding of market substitutes for the patented product or process. The evident reasons are that expansive patent protection can impose concrete economic costs on consumers, i.e., monopoly's higher prices and reduced output. It can also inhibit the next inventor from beneficial innovation in the patentee's field. And uncertainty as to legal entitlements plainly has its systemic costs. 82

The policy balance among these countervailing considerations might, presumably, be struck reasonably in different ways. The proper legal question, however, is what balance Congress has struck. Given that there is no established "correct" balance, and that the attempt to solve one "problem" by introducing a flexible non-literal infringement standard itself creates other problems, there is simply nothing determinate about a policy analysis of the issue. In these circumstances, no implication about congressional intent can be drawn from an independent policy analysis, and there is no basis for disregarding the plain import of the statute.

Nor, finally, can permanent adoption of a doctrine of equivalents be justified by claims of reliance on lower court precedent. Even aside from the fact that any such reliance is intrinsically time-limited by the terms of past

<sup>&</sup>lt;sup>82</sup> See, e.g., R. Cooter & T. Ulen, Law and Economics 100, 135-36 (1988); F. Scherer & D. Ross, Industrial Market Structure and Economic Performance 626 (3d ed. 1990); F. Machlup, An Economic Review of the Patent System, Study of the Subcomm. on Patents, Trademarks, and Copyrights of the Sen. Judiciary Comm., 85th Cong., 2d Sess. 12, 63-64 (1958); Gilbert & Shapiro, Optimal Patent Length and Breadth, 21 Rand J. Econ. 106, 107, 108-09, 112 & n.3 (1990).

patents, the basis for such a claim is too weak. The doctrine has long presented a "most contentious issue." R. Merges, Patent Law and Policy 657 (1992). Over 25 years ago, the United States urged the doctrine's elimination, or drastic curtailment, as "irreconcilable with fundamental principles of congressional patent policy." Brief for United States as Amicus Curiae, supra, at 16. In 1972, a commentator, in urging the doctrine's elimination because its mere threat "creates a harmful and unnecessary uncertainty in the patent system," explained that the doctrine was only "infrequently applied." Jessup, 54 J. Pat. Off. Soc'y at 251. More than 17 years ago, in Coleco Industries, Inc. v. U.S. Int'l Trade Comm'n, 573 F.2d 1247 (C.C.P.A. 1978), a divided Court of Customs and Patent Appeals confirmed the uncertain continuing scope of any doctrine of equivalents: three of the five judges, though finding no infringement, indicated a broad view of the doctrine's availability (id. at 1254-58), while the two concurring judges (Rich, J., and Markey, C.J.) indicated, to the contrary, that the doctrine of equivalents "is an exception to the rule that patentees are limited to what they claim and is not applied in every case" and should not be applied in the absence of a specific basis, such as the "great advance" of the plaintiff's patent or the defendant's having "appropriated the essence of the invention." Id. at 1258. By the time the Federal Circuit was created, patent counsel were on notice that expansion of patent claims through the doctrine was not predictable or reliable.

Within the Federal Circuit, which has had to grant en banc review of the doctrine twice in a decade (see Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 934-35 (Fed. Cir. 1987), cert. denied, 485 U.S. 961, 1009 (1988)), there has long been "considerable debate and uncertainty" about the doctrine. Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv. J. L. & Tech. 281, 301 (1994). Though "once thought to be a narrow doc-

trine" (Adelman & Francione, 137 U. Pa. L. Rev. at 699), it has been the subject of expansion, contraction, refinement, and questioning since the Federal Circuit was created. By the late 1980s, the doctrine was widely noted to be in a state of considerable disarray. See, e.g., ibid.; Hantman, 70 J. Pat. & Trademark Off. Soc'y at 554 ("great deal of confusion"); Smith, The Federal Circuit's Modern Doctrine of Equivalents in Patent Infringement, 29 Santa Clara L. Rev. 901, 902 (1989) (no "coherent view"); Harris, Three Ambiguities of the Doctrine of Equivalents in the Federal Circuit, 69 J. Pat. & Trademark Off. Soc'y 91, 96 (1987) ("inherent uncertainty").

In these circumstances, any claim of significant reliance on an expansive doctrine of equivalents is entitled to little weight. Indeed, for individual patentees, an assertion of reliance on non-literal infringement amounts to an avowal that, despite patentees' complete ability during the drafting process to define the full scope of what they believed themselves to have invented, they were less than comprehensive or thorough in the process, counting instead on the future use of the doctrine of equivalents to expand their patents beyond the literal meaning of the claim. The equities of such an assertion hardly warrant maintenance of penumbral infringement protection in fundamental contradiction to the rest of the patent statute.

ctracing meanderings); Hughes Aircraft Co. v. United States, 717 F.2d 1351 (Fed. Cir. 1983); Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558 (Fed. Cir. 1986); Perkin-Elmer Corp. v. Westinghouse Electric Corp., 822 F.2d 1528 (Fed. Cir. 1987); Pennwalt, supra; Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422 (Fed. Cir. 1989); London v. Carson Pirie Scott & Co., 946 F.2d 1534 (Fed. Cir. 1991); Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991); Charles Greiner & Co. Inc. v. Mari-Med Mfg. Inc., 962 F.2d 1031, 1036 (Fed. Cir. 1992) (doctrine is the exception, not the rule; "careful confinement of the doctrine of equivalents to its proper equitable role, promotes certainty and clarity in determining the scope of patent rights").

## CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted,

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**APPENDIX** 

#### STATUTORY APPENDIX

- 35 U.S.C. § 112, entitled "Specification," provides in pertinent part:
  - [¶ 1] The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.
  - [¶ 2] The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
  - [¶6] An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.
- 35 U.S.C. § 131, entitled "Examination of application," provides:

The Commissioner shall cause an examination to be made of the application and the alleged new invention; and if on such examination it appears that the applicant is entitled to a patent under the law, the Commissioner shall issue a patent therefor.

- 35 U.S.C. § 154, entitled "Contents and term of patent," provides in pertinent part:
  - (a) (1) CONTENTS.—Every patent shall contain a short title to the invention and a grant to the patentee, his heirs or assigns, of the right to exclude others from making, using, offering for sale, or sell-

ing the invention throughout the United States or importing the invention into the United States, and, if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States, or importing into the United States, products made by that process, referring to the specification for the particulars thereof.

(4) SPECIFICATION AND DRAWING.—A copy of the specification and drawing shall be annexed to the patent and be a part of such patent.

35 U.S.C. § 251, entitled "Reissue of defective patents," provides in pertinent part:

- [¶1] Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent. No new matter shall be introduced into the application for reissue.
- [¶ 4] No reissue patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent.
- 35 U.S.C. § 271, entitled "Infringement of patent," provides in pertinent part:
  - (a) Except as otherwise provided in this title, whoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.

35 U.S.C. § 281, entitled "Remedy for infringement of patent," provides:

A patentee shall have remedy by civil action for infringement of his patent.

35 U.S.C. § 282, entitled "Presumption of validity; defenses," provides in pertinent part:

A patent shall be presumed valid. Each claim of a patent \* \* \* shall be presumed valid independently of the validity of other claims \* \* \*. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity.

35 U.S.C. § 283, entitled "Injunction," provides:

The several courts having jurisdiction of cases under this title may grant injunctions in accordance with the principles of equity to prevent the violation of any right secured by patent, on such terms as the court deems reasonable.

35 U.S.C. § 284, entitled "Damages," provides:

Upon finding for the claimant the court shall award the claimant damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interests and costs fixed by the court.

When the damages are not found by a jury, the court shall assess them. In either event the court may increase the damages up to three times the amount found or assessed.

The court may receive expert testimony as an aid to the determination of damages or of what royalty would be reasonable under the circumstances.

# LIST OF PARTIES PURSUANT TO RULES 14.1(b) AND 29.6

The names of all parties in the court whose judgment is sought to be reviewed appear in the caption of this Brief.

Respondent has the following parent and subsidiary companies:

Freedom Chemical Company (parent)
A Chem (UK) Limited (subsidiary)

## TABLE OF CONTENTS

	PARTIES PURSUANT TO
RULES 14	3.1(b) AND 29.6 ii
TABLE O	F CONTENTS iii
TABLE O	F AUTHORITIESv
BRIEF FO	OR RESPONDENT 1
COUNTE	RSTATEMENT OF THE CASE 1
SUMMAR	Y OF ARGUMENT 8
ARGUME	NT 11
I.	THE DOCTRINE OF EQUIVALENTS WAS NOT ABOLISHED BY AND IS FULLY CONSISTENT WITH THE 1952 PATENT ACT
П.	THE DOCTRINE OF EQUIVALENTS SHOULD BE BROADLY APPLIED AND AVAILABLE TO PATENTEES IN EVERY PATENT INFRINGEMENT ACTION

ш.	THE ISSUE OF
	INFRINGEMENT UNDER
	THE DOCTRINE OF
	EQUIVALENTS IS AN
	ISSUE OF FACT TO BE
	SUBMITTED TO THE JURY
	IN A JURY CASE
CONCLUSI	ON 50
CONSTITU	TIONAL AND STATUTORY

## TABLE OF AUTHORITIES

Cases Cited:
Anderson v. Liberty Lobby, Inc., 477 U.S. 242 (1986) 40
Arkwright v. Nightingale, 1 Websters Patent Cases 60 (C.P. 1785)
Aro Manufacturing Co. v. Convertible Top Replacement Co., 365 U.S. 336 (1961) 12, 24
Autogiro Co. of America v. United States, 384 F.2d 391 (Ct. Cl. 1978)
Baltimore & Carolina Line, Inc. v. Redman, 295 U.S. 654 (1935)
Battin v. Taggert, 58 U.S. (17 How.) 74 (1854) . 38, 47
Belding Manufacturing Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894) 25
Biodex Corp. v. Loredan Biomedical Inc., 946 F.2d 850 (Fed. Cir. 1991) 29
Bischoff v. Wethered, 76 U.S. (9 Wall.) 812 (1870)

Blonder-Tongue Lab., Inc. v. University of
Ill. Foundation, 402 U.S. 313 (1971) 41
Brown v. Guild, 90 U.S. (23 Wall.) 181 (1874) 25
Burr v. Duryee, 68 U.S. (1 Wall.) 531 (1864) 25
Case v. Brown, 69 U.S. (2 Wall.) 320 (1864) 25
Christianson v. Colt Industrial Operating Corp., 486 U.S. 800 (1988) 48
Computing Scale Co. of America v. Automatic Scale Co., 204 U.S. 609 (1907)
Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405 (1908) 19, 29
Coupe v. Royer, 155 U.S. 565 (1895) 25, 44, 47
Daubert v. Merrell Dow Pharmaceuticals, Inc., 113 S. Ct. 2786 (1993) 41
Diamond v. Chakrabarty, 447 U.S. 303 (1980) 36
Dimick v. Schiedt, 293 U.S. 474 (1935)
In re Donaldson Co., 16 F.3d 1189 (Fed. Cir. 1994) . 17
Duff v. Sterling Pump Co., 107 U.S. 636 (1883) 25, 27

Exhibit Supply Co. v. Ace Patents Corp., 315
U.S. 126 (1942)
Garrett Corp. v. United States, 422 F.2d 874 (Ct. Cl.
1970)
General Electric Co. v. Wabash Appliance Corp.,
304 U.S. 364 (1938) 19
Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874) 25
Graham v. John Deere, 383 U.S. 1
(1965)
Graver Tank & Manufacturing Co. v. Linde Air
Products, Co., 336 U.S. 271 (1949) 6, 34
Graver Tank Manufacturing Co. v. Linde Air
Products Co., 339 U.S. 605 (1950) passim
Gray v. James, 10 F. Cas. 1015 (C.C.D. Pa. 1817) . 25
Halliburton Oil Well Cementing Co. v. Walker,
329 U.S. 1 (1946)
Heath v. Umwin, 2 Websters Patent Cases 296
(H.L. 1855)
Hill v. Thompson And Forman, 1 Websters Patent
Cases 239 (C.P. 1818) 26
Imhaeuser v. Buerk, 101 U.S. 647 (1879) 25

Industrial Chemicals, Inc. v. Carbide & Carbon
Corp., 315 U.S. 668 (1942) 45
Insta-Foam Products, Inc. v. Universal Foam
System, Inc., 906 F.2d 698 (Fed. Cir. 1990) 46
Ives v. Hamilton, 92 U.S. 426 (1875)
Jacob v. City of New York, 315 U.S. 752 (1942) 36
Johnson v. Transportation Agency,
480 U.S. 616 (1986) 14, 17, 18
Kewanee Oil Co. v. Bicron Corp.,
416 U.S. 470 (1974)
Keystone Bridge Co. v. Phoenix Iron Co.,
95 U.S. 274 (1877)
Keystone Driller Co. v. Northwest Engineering
Corp., 294 U.S. 42 (1935)
Lorillard v. Pons, 434 U.S. 575 (1977) 15, 17
Machine Co. v. Murphy,
97 U.S. 120 (1878) 20, 22, 25, 30, 42
Markman v. Westview Instruments, Inc.,
No. 95-26, slip op.,
(Apr. 23, 1996) passim

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(1995), $aff'd$ , $-$ U.S. $ (1996)$ 45
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McClurg v. Kingsland, 42 U.S. (1 How.)
202 (1843)
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(20 How.) 402 (1858)
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320 U.S. 661 (1944)
Merrill v. Yeomans, 94 U.S. 568 (1877) 19
Milcor Steel Co. v. George A. Fuller Co.,
316 U.S. 143 (1942)
Odiorne v. Winkley, 18 F. Cas. 581
(C.C.D. Mass. 1814)
Patterson v. McLean Credit Union, 491 U.S.
164 (1988)
Pennwalt Corp. v. Durand-Wayland, 833
F.2d 931 (Fed. Cir. 1987), cert.
denied, 485 U.S. 961 (1988), and cert. denied, 485 U.S. 1009 (1988) 17
Read Corp. v. Portec, Inc., 970 F.2d 816
(Fed. Cir. 1992)

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(1871)
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1804)
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168 F.2d 691 (2d Cir. 1948)
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319 (1890)
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775 F.2d 1107 (1985)
Sanitary Refrigerator Co. v. Winters,
280 U.S. 30 (1929) 25, 26, 28, 30, 39
Schriber-Schroth Co. v. Cleveland Trust Co.,
311 U.S. 211 (1940)
Sewell v. Jones, 91 U.S. 171 (1985)
Seymour v. Osborne, 78 U.S. (11 Wall.) 516
(1870)
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Singer Manufacturing Co. v. Cramer,
192 U.S. 265 (1904)

Sloat v. Spring, 22 F. Cas. 330	Tyler v. Boston, 74 U.S.
(C.C.E.D. Pa. 1850)	Union Asbestos & Rubb
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(Fed. Cir. 1982)	United States v. France (1st Cir. 1984)
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476 U.S. 409 (1986)	In re Wadlinger, 496 F
Stead v. Anderson, 1 Websters Patent Cases 151	Water-Meter Co. v. De
(C.P. 1847)	White v. Dunbar, 119
Sutter v. Robinson, 119 U.S. 530 (1886)	Willie V. Danbar, 117
	Wilson Sporting Goods
Tennant v. Peoria Pekin Railway, 321 U.S. 29	Associates, 904
(1944)	cert. denied, 49
Things Remembered, Inc. v. Petrarca,	Winans v. Denmead, 5
— U.S. —, 116 S. Ct. 494 (1995) 46	330 (1853) .
Topliff v. Topliff, 145 U.S. 156 (1892) 21	7 11 22 11 11 11
	Statutes Cited:
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(1863)	5 Stat. 117 (1836) .

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296 F.20 46 (/til Cil. 1902)
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317 U.S. 228 (1942)
United States v. Fausto, 484 U.S. 439 (1988) 49
United States v. Francesco, 725 F.2d 817
(1st Cir. 1984)
In re Wadlinger, 496 F.2d 1200 (C.C.P.A. 1974) 21
Water-Meter Co. v. Desper, 101 U.S. 332 (1879) 25
White v. Dunbar, 119 U.S. 47 (1886)
Wilson Sporting Goods v. David Geoffrey &
Associates, 904 F.2d 677 (Fed. Cir.),
cert. denied, 498 U.S. 992 (1990) 34
Winans v. Denmead, 56 U.S. (15 How.)
330 (1853) passim
Statutes Cited:
4 Stat. 577 (1832)
5 See 117 (1926) 19 21

16 Stat. 198 (1870)						
45 Stat. 732 (1928)						
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108 Stat. 4988 (1994)						
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ENGLISH PATENT SYSTEM	
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Monopolies, 26 Miss. L.J. 149 (1955) 2	23
Sean T. Moorhead, Note, The Doctrine of	octrine of
Equivalents: Rarely Actionable	
Non-Literal Infringement or	
the Second Prong of Patent	
Infringement Charges?, 53 OHIO	
ST. L.J. 1421 (1992)	
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the First-to-File System for Patents, 22 ST.	
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of the Patent Act of 1952, 35 J. PAT.	
OFF. Soc'y 476 (1953) 12, 1	13
WRIGHT & MILLER, FEDERAL PRACTICE &	RAL PRACTICE &
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H.R. REP. No. 312, 97th Cong., 1st Sess. 11
(1981)
H.R. REP. No. 1923, 82 Cong., 2d Sess. 3 (1952) 13
S. REP. No. 1979, 82d Cong., 2d Sess.,
reprinted in 1952 U.S.C.C.A.N. 2394 11
8 CONG. REC. A415 (Jan. 28, 1952)

## BRIEF FOR RESPONDENT

# PROVISIONS INVOLVED

Pertinent Constitutional and Statutory provisions are set forth in an Appendix to this Brief.

## COUNTERSTATEMENT OF THE CASE

This action involves the infringement of a unique and valuable patent owned by Respondent, Hilton Davis. J.A. 6-38. The patent covers an innovative complex chemical process for producing two specific synthetic red and yellow food dyes: FD&C (food, drug and cosmetic) Red 40 and FD&C Yellow 6. Pet. App. 2a. The patented process was the first to successfully purify these food dyes to the extremely high purity required by the FDA for human consumption without the use of a costly, laborious and environmentally undesirable step known as "salting out." Pet. App. 2a; J.A. 15. "Salting out" involves adding large quantities of rock salt to cause the dye to crystallize out of solution, filtering the crystalline dye in large filter presses to produce a semi-solid press cake, manually scraping the press

<sup>&</sup>lt;sup>1</sup> These dyes are widely used as colorants in many popular food products including M&Ms, Kool Aid and numerous soft drinks. T.R. 65-67. Petitioner and Respondent are the only domestic producers of these important dyes. C.A. Jt. App. 113-15.

cake from the filter, subjecting the press cake to a series of successively more dilute salt solution washes, redissolving the press cake in water, and finally evaporating the solution to produce the dry dye. J.A. 12-16; C.A. Jt. App. 139-50, 3224-25. The patented Hilton Davis process eliminates most of these steps. J.A. 15.

In 1982, the inventors of the patented process, Drs. Cook and Rebhahn, conceived a revolutionary approach using a membrane separation process, now known as "ultrafiltration," to separate the impurities in the dye solution from the dye molecules without "salting out." Pet. App. 2a-3a.<sup>2</sup>

Respondent filed its initial patent application based on extensive tests of the new process carried out in October 1982 and January 1983. Pet. App. 3a. After extensive further in-house testing, Respondent filed a continuation-in-part application claiming a broader range of membranes. *Id.*; C.A. Jt. App. 1427-28, 1520-21.

During prosecution of the patent application, the Patent Office initially rejected the claims as obvious in view of the prior art Booth patent. J.A. 78-83. To distinguish its invention from the Booth patent, Respondent noted four important distinctions: (1) the enormous differences between the molecular weights of the dyes purified by Booth and those purified by Respondent's process; (2) the intentional addition of salt to the solution required by the Booth process, antithetical to the elimination of "salting out"; (3) the very high pH ranges deliberately required in the Booth process (above 9.0 and preferably 11-13), in contrast to the relatively

low pH used in Respondent's process (below 9.0); and (4) the very low pressures used in the Booth process (25-200 p.s.i.g., preferably 75-125 p.s.i.g.), in contrast to the much higher pressures required by Respondent's process (200-400 p.s.i.g.). J.A. 96-108. After that combination of distinguishing features was pointed out to the Patent Examiner, the patent issued in 1985.<sup>3</sup> J.A. 109.

Petitioner developed its infringing process on a parallel, but not completely independent, path. In 1978, Petitioner unsuccessfully experimented with the Booth process, which used "salting out," and completely abandoned its process development efforts. C.A. Jt. App. 293-95, 2996-97. In August 1982, Petitioner unsuccessfully tested a filtration process which continued to incorporate a "salting out" step. Pet. App. 5a; C.A. Jt. App. 297, 1178, 1447, 2177, 2439-56. After this failure, Petitioner, unable to produce a viable process, again abandoned work on filtering Red 40 and Yellow 6 dyes until 1986. Pet. App. App. 5a; J.A. 150-53; C.A. Jt. App. 1026-27, 1044, 1144-46.

After four years of inactivity, Petitioner unexpectedly demonstrated a process which eliminated the "salting out" step by using Petitioner's patented process. Pet. App. 4a. This sudden success was no coincidence. Petitioner's previously unsuccessful process had been modified using Respondent's confidential information misappropriated by a third party (Osmonics) to use the same critical membranes,

<sup>&</sup>lt;sup>2</sup> Petitioner does not challenge the finding below that Respondent invented the patented process.

In its opinion, the court below states that "[t]he inventors added the phrase 'at a pH from approximately 6.0 to 9.0' during prosecution to distinguish [the Booth patent]." Pet. App. 4a. This statement is not accurate. The Court later correctly explained that the pH range was added "to avoid the disclosure in the Booth patent of an ultrafiltration process operating at a pH higher than 9." Pet. App. 24a.

process parameters and equipment developed and used by Respondent. C.A. Jt. App. 522-23, 545, 1264, 1269-73, 3074-85. Thus there was clear evidence presented below that Petitioner's process was not developed independently, but was derived in its most critical and necessary attributes from Respondent's process through breach of secrecy by Osmonics.

Petitioner's deliberate use of the patented process to sell enormous quantities of dyes made by the infringing process continued even after learning of Respondent's patent and being warned of infringement. Petitioner made no attempt to design around Respondent's patent until a permanent injunction was entered, after which it immediately modified its process in an attempt to avoid infringement. See Exhibit A to Brief of Appellee in the court below; C. A. Jt. App. 895-900, 912-13.

At trial, the jury was instructed that it could find infringement under the doctrine of equivalents if the accused process performed substantially the same function, way and result as the patented process. Pet. App. J.A. 59-60. The jury found, and the trial court and the court below affirmed, that the Petitioner's process used a purification technique for purifying Red 40 and Yellow 6 dyes having steps which were the same as or equivalent to those claimed in Respondent's patent, e.g., operating at a pH of 5-6 (the equivalent of the claimed pH of 6-9) and a pressure of 200-500 p.s.i.g. (the equivalent of the claimed 200-400 p.s.i.g.). Pet. App. 23a-24a, 165a-167a; J.A. 69.4

In Respondent's patented process, the "function" of the pH is to: (1) prevent damage to the membrane; (2) produce a more or less neutral product as required by the FDA; (3) be compatible with the chemistry of the process: and (4) destroy triazine. Pet. App. 23a; J.A. 112-16; C.A. Jt. App. 230-32, 366-76. Petitioner operated its infringing process with a pH meeting these functions. Pet. App. 23a. As to the "way" requirement, the pH is adjusted in both the accused and patented processes by addition of an acid to obtain the desired pH value. J.A. 28-29; C.A. Jt. App. 2178, 2793, 2798, 2812. The "result" of utilizing the appropriate pH is that the membrane is not destroyed, the process operates to produce FDA certifiable dyes, and triazine is destroyed — results achieved in the infringing process. C.A. Jt. App. 231, 363-65, 1295, 2174, 2178. Consequently, the test for infringement under the doctrine of equivalents is clearly met. Pet. App. 23a.6 While Petitioner creates the misleading impression that its process is fundamentally

Petitioner actually operated its process near, if not at, pH 6, and in many instances with a pressure within the range of 200-400 p.s.i.g., supporting a finding of *literal* infringement of these claim (continued...)

<sup>4(...</sup>continued) limitations. Pet. App. 23a; J.A. 117-22; C.A. Jt. App. 372-75, 552, 560, 864-66, 1557, 2439-56, 2998-3000, 3012-13, 3222.

Petitioner argues that it avoids infringement by operating at a lower pH which would cause so-called "foaming" in the Hilton Davis process. If one of the functions of pH is to prevent "foaming," the infringing process accomplishes that function. Moreover, the patented process was successfully tested to pH values as low as 2.2 with no effect on the process because of "foaming." J.A. 111, 143; C.A. Jt. App. 232, 1099, 1406-7, 1410-11, 1477, 1516-17, 3108-45.

The evidence also showed that other claim requirements (e.g., pressure, pore size and acid) were equivalently met in the infringing process. See, e.g., Pet. App. 23a-24a; C.A. Jt. App. 164-66, 228-29, 360-62. Petitioner does not challenge the finding of equivalence of pore size and acid.

7

different from Respondent's, the jury, the District Court and the *en banc* court below all found otherwise: the differences between the patented and infringing process were no more than insubstantial.<sup>7</sup> Pet. App. 2a, 23a.

The jury, after hearing extensive evidence offered over nine days with nine expert and technical fact witnesses and being properly instructed, deliberated for several days, and returned a verdict supported by nine special verdicts, finding that Respondent's patent remained valid, and that Petitioner infringed under the doctrine of equivalents (although not willfully), and was liable for 20% of Respondent's request for damages. Pet. App. 5a; J.A. 41-70; C.A. Jt. App. 38-39, 2015-19.

The trial court denied Petitioner's post-trial motions, ruling independently that Petitioner's process infringed under the doctrine of equivalents. Pet. App. 5a, 165a-166a, 170a-171a. The court also entered a narrowly drawn permanent injunction that permitted Petitioner to continue

practicing a process for purifying Red 40 and Yellow 6 at a pressure above 500 p.s.i.g. or at a pH above 9.01.<sup>10</sup> Pet. App. 5a, 172a-173a.

A panel of the court below heard oral argument on July 9, 1993. Subsequently, the court decided sua sponte to hear the appeal en banc to answer three specific questions. Pet. App. 5a. 11 On the merits, the court below affirmed per curiam "[b]ecause substantial evidence supports the jury verdict of infringement." Id. at 2a, 32a.

Petitioner's approach is sometimes known as "tickling" the patent — a practice used by unscrupulous competitors to come as close as possible to a patented invention to obtain its benefits by making unimportant and insubstantial changes and substitutions — a practice condemned by this Court in *Graver Tank Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605, 609 (1950). See Pet. App. 22a.

Infringement under the doctrine of equivalents is a question of fact. Graver Tank, 339 U.S. at 609. Since two courts have already considered these facts, they cannot be reconsidered. Graver Tank & Mfg. Co. v. Linde Air Prods., Co., 336 U.S. 271, 275 (1949) [Graver Tank fl.

In a separate opinion, a panel of the court below affirmed the District Court's decisions on post-trial motions involving validity. Pet. App. 153a-159a. Petitioner does not seek review of those rulings. Pet. Br. at 7 n.6.

Petitioner was enjoined "from infringing claims 1, 2, 3, 13 or 14 of [the Hilton Davis patent] by selling or manufacturing FD&C Red 40 and FD&C Yellow 6 made at a pH less than 9.01 and at pressures at the input to the first membrane of less than 500 p.s.i.g." Pet. App. 172a.

<sup>(1)</sup> Does a finding of infringement under the Doctrine of Equivalents require anything in addition to proof of the facts that there are the same or substantially the same (a) function, (b) way, and (c) result, the so-called triple identity test of Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950), and cases relied on therein? If yes, what? The court answered that "the finding of infringement under the doctrine of equivalents requires proof of insubstantial differences between the claimed and accused products or processes." Pet. App. 17a. (2) Is the issue of infringement under the Doctrine of Equivalents an equitable remedy to be decided by the Court, or is it, like literal infringement, an issue of fact to be submitted to the jury in a jury case? The court answered that "infringement under the doctrine of equivalents is an issue of fact to be submitted to the jury in a jury trial with proper instructions, and to be decided by the judge in a bench trial." Id. (3) Is application of the Doctrine of Equivalents by the trial court to find infringement of the patentee's right to exclude, when there is no literal infringement of the claim, discretionary in accordance with the circumstances of the case? The court answered that "[t]he trial judge does not have discretion to choose whether to apply the doctrine of equivalents when the record shows no literal infringement." Id. at 18a.

#### SUMMARY OF ARGUMENT

The judgment finding Petitioner liable for patent infringement under the doctrine of equivalents should be affirmed. The Federal Circuit, exclusively charged by Congress to unify the patent law, after spirited debate, with benefit of the enlightened wisdom of its full en banc membership, and with the assistance of numerous amici curiae, faithfully restated the principle of the doctrine of equivalents defined in Graver Tank & Manufacturing Co. v. Linde Air Products Co. and its predecessors as wise and pragmatic law, fully consistent with the Patent Act of 1952 and Article I § 8, cl. 8 of the Constitution. Petitioner, by challenging the doctrine of equivalents itself, seeks to destroy one of the most important bulwarks underlying our country's patented technology. To affirm the decision below assures the continuance of this necessary rule of law. To change the law returns our patent system to the dark ages where anyone can "practice a fraud on a patent" simply by making "unimportant and insubstantial changes" — an anathema to this Court's wisdom of Graver Tank.

The court below correctly held that the doctrine of equivalents was neither judicially repealed nor affected by the 1952 Patent Act. Further, this Court has recently confirmed in Markman v. Westview Instruments, Inc. that patent infringement incorporates not only literal infringement but also infringement under the doctrine of equivalents.

Previously, in Aro Manufacturing Co. v. Convertible Top Replacement Co., this Court determined that the infringement provisions of the 1952 Patent Act left intact the entire body of case law on patent infringement. Thus, the guiding principles of the doctrine of equivalents laid down in Graver Tank and its predecessors were incorporated sub silentio in the 1952 Act. Since that time, despite continual

tinkering with the patent laws, Congress has not modified the doctrine. There is, therefore, a presumption, not rebutted, that Congress' failure to repudiate the doctrine of equivalents is tacit recognition of its continued viability. The contention that the doctrine of equivalents conflicts with requirements of precise claiming and correction of mistakes by reissue under the patent statutes was laid to rest by *Graver Tank*. Finally, this Court's decision in *Markman* makes it clear that a patentee may invoke the doctrine of equivalents in all cases.

In its decision below, the en banc court seized the opportunity to "restate - not to revise - the test for infringement under the doctrine of equivalents." In doing so, the court faithfully adopted this Court's fundamental test of "insubstantial differences" viewed according to an objective standard. Thus, the doctrine of equivalents does not depend on equitable factors, including subjective bad faith of the infringer. Faithfully adhering to this Court's precedent, the court below restated the Graver Tank factual considerations relevant to a determination of "insubstantial differences," including consideration of substantially similar function/way/result, interchangeability of equivalent devices or process steps, copying, independent development and designing around the patent. Nor did the decision below disturb traditional limits on the doctrine of equivalents, such as prosecution history estoppel and limitations imposed by prior art.

Finally, the court below correctly held that the doctrine of equivalents is an issue of fact to be submitted to a jury in a jury trial with proper instructions. Viewed under the historical test and this Court's precedent, the issue of the doctrine of equivalents is properly submitted to a jury as a question of fact. In contrast to the issue resolved in *Markman*, no decisional precedent has designated the doctrine of equivalents an issue of law for the court alone.

Further, the inquiries underlying equivalency are intensely fact dependent and of the type regularly submitted to a jury, requiring balancing of credibility, persuasiveness and weight of evidence - traditional jury functions. Unlike claim interpretation, uniformity is not paramount since each equivalency determination presents unique factual questions. In Winans v. Denmead, this Court established a two-part infringement test: (1) what is the thing patented; (2) has the thing been constructed, used or sold by the defendants. The first inquiry is a question of law; the second is a question of fact to be submitted to a jury. The doctrine of equivalents is not part of the claim interpretation analysis, but is to be applied only after claim construction has been completed by the court as part of the second Winans infringement step. Further, the claim construction analysis under Markman does not require ascertainment of an absolute maximum outer boundary of equivalent structures or processes, with a subsequent determination of whether the accused device or process falls within that boundary. The inquiry is rather a purely factual comparison of "insubstantial differences" between the patented device or process and the accused device or process.

In the 1982 Federal Courts Improvement Act creating the Court of Appeals for the Federal Circuit, Congress endowed that court with exclusive jurisdiction in patent cases and the charge to unify patent law. Fulfilling its mandate, the court below has acted *en banc* to unify the law of the scope and application of the doctrine of equivalents and to affirm the right to jury trial on that issue. Since those determinations are consistent with congressional intent underlying patent law, including the 1952 Patent Act, the decision below should not be disturbed, but rather should be affirmed.

### **ARGUMENT**

# I. THE DOCTRINE OF EQUIVALENTS WAS NOT ABOLISHED BY AND IS FULLY CONSISTENT WITH THE 1952 PATENT ACT

Petitioner asserts that the 1952 Patent Act (35 U.S.C. §§ 100 et seq.) mutely purged American jurisprudence of any judicially created patent concepts, including the doctrine of equivalents, which were not expressly and unambiguously set forth in that Act. This Court has previously rebuffed an attempt to abolish the doctrine of equivalents as contrary to the predecessor of the 1952 Act. See Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136 (1942). The court below correctly held that the doctrine of equivalents was neither judicially repealed nor affected by the 1952 Act. Pet. App. 26a-28a. Moreover, this Court in Markman v. Westview Instruments, Inc., No. 95-26, slip op. at 2 (Apr. 23, 1996), recently reaffirmed the continued existence of the doctrine of equivalents, notwithstanding the intervention of the 1952 Act (a patent protects not only literal infringement but also "products that go to the heart of the invention but avoid the literal language of the claim by making a noncritical change").

The 1952 Act added 35 U.S.C. § 271,<sup>12</sup> which was the first statutory provision for patent infringement. S. REP. No. 1979, 82d Cong., 2d Sess., reprinted in 1952 U.S.C.C.A.N. 2394, 2402. This provision, together with

<sup>&</sup>quot;[W]hoever without authority makes, uses or sells any patent invention . . . infringes the patent." 35 U.S.C. § 271(a).

§ 285,<sup>13</sup> broadly grants the right to a civil action "for infringement." The statute does not distinguish between literal infringement or infringement under the doctrine of equivalents, nor does it proscribe the doctrine of equivalents expressly or inferentially. As defined by the Act, there is but one cause of action: for patent infringement – whether literal or by equivalents. In fact, "the literal infringement of a patent is rarely found." 6 E. LIPSCOMB, WALKER ON PATENTS § 22:23 at 512 (3d ed. 1990); Graver Tank Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 607 (1950) ("Outright and forthright duplication is a dull and very rare type of infringement.").

This Court has noted that "§ 271(a) of the new Patent Code [of 1952], which defines 'infringement,' left intact the entire body of case law on direct infringement." Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342 (1961). Giles Rich, one of the principal drafters of the 1952 Act and now a member of the Federal Circuit, explained: "[p]aragraph [271](a) defines direct infringement and is present only for the sake of completeness. We got along without it for 162 years and we could again. Its omission would change nothing." Giles Rich, Infringement Under Section 271 of the Patent Act of 1952, 35 J. PAT. OFF. Soc'y 476, 491 (1953). It is thus clear that the 1952 Act did not affect the existing "body of case law on direct infringement," which included Graver Tank decided two years earlier and its forerunners embodying the doctrine of

equivalents. Indeed, the 1952 Act tacitly adopted Graver Tank by not repudiating it.<sup>14</sup>

The principal purpose of the 1952 Patent Act was "the codification of title 35. United States Code, and involves simplification and clarification of language and arrangement." 1952 U.S.C.C.A.N. at 2397. Notably, the Act and its legislative history make no express change in the then-existing law of the doctrine of equivalents. In fact, the portions of the Act relating to infringement expanded the patent protection by overturning certain Supreme Court decisions, e.g., Mercoid Corp. v. Mid-Continent Investment Co., 320 U.S. 661 (1944) (unduly restricting rights of the patent owner in areas of contributory infringement and patent misuse). 1952 U.S.C.C.A.N. at 2402; see also, 35 J. PAT. OFF. Soc'y at, 489-90 ("[i]ts purpose is to correct an injustice and restore the equal protection of the patent law to all the types of inventions on which the statute authorizes the grant of patents"). Accordingly, Graver Tank was one of the few cases of its era where this Court did not restrict patent rights, and should therefore be given great deference in accord with Congressional intent underlying the 1952 Act. See Karl B. Lutz, The New 1952 Patent Statute, 35 J. PAT. OFF. Soc'y 155, 156-57 (1953) ("[C]ongress, being cognizant of this changed attitude of the courts, has inserted in the new act some provisions which codify the 'common

<sup>&</sup>quot;A patentee shall have remedy by civil action for infringement of his patent." (emphasis added).

There is clear evidence that Congress was aware of the doctrine of equivalents when it enacted the 1952 Act from contemporaneous comments. See comments of representative of Department of Justice, H.R. Rep. No. 1923, 82 Cong., 2d Sess. 3 (1952); comments of Rep. Joseph R. Bryson speaking at the Philadelphia Patent Law Association, (8 Cong. Rec. A415, A416 (Jan. 28, 1952). These comments provide further insight that the doctrine was not abrogated by the 1952 Act.

law' of patents as it existed prior to the recent apostasy from the benevolent policy of the Constitution").

Petitioner contends that congressional silence on the doctrine of equivalents in § 271 overturns prior precedent of this Court. It is illogical and at odds with basic principles of statutory interpretation to argue that while Congress expressly broadened protection afforded to patent owners in some areas, it silently retracted others. In Midlantic National Bank v. New Jersey Department of Environmental Protection, this Court rejected the argument that the enactment of the bankruptcy code had silently abrogated a longstanding judicially developed bankruptcy doctrine, holding that:

The normal rule of statutory construction is that if Congress intends for legislation to change the interpretation of a judicially created concept, it makes that intent specific . . . . If Congress wishes to [change this concept], 'the intention would be clearly expressed, not left to be collected or inferred from disputable considerations of convenience

474 U.S. 494, 501 (1986) (citations omitted).

Since there is no evidence that Congress by bill or otherwise has ever expressly considered legislation affecting the doctrine of equivalents, it must be assumed that the rule of Graver Tank and its predecessors is correct. See Johnson v. Transportation Agency, 480 U.S. 616, 629 n.7 (1986) ("Congress has not amended the statute to reject our construction, nor have any such amendments even been proposed, and we therefore may assume that our interpretation was correct."). This Court has instructed:

Congress is presumed to be aware of an administrative or judicial interpretation of a

statute and to adopt that interpretation when it re-enacts a statute without change. So too, where as here, Congress adopts a new law incorporating sections of a prior law, Congress normally can be presumed to have had knowledge of the interpretation given to the incorporated law, at least insofar as it affects the new statute.

Lorillard v. Pons, 434 U.S. 575, 580-86 (1977) (citations omitted). Here, Congress is presumed to have been aware of the doctrine of equivalents as defined by *Graver Tank* and to have incorporated that law into the 1952 Act insofar as it might affect § 271(a). That presumption has not been overcome.

Prior to the 1952 Act, Congress passed patent legislation on over sixty occasions. See 9 E. LIPSCOMB, WALKER ON PATENTS (3d ed. 1990) (compiling statutes). Since enactment of the 1952 Act, Congress has revisited portions of the patent statute on twenty-nine occasions. Not once did Congress manifest any intent to eliminate, modify or otherwise affect the doctrine of equivalents as a direct infringement tool. Notably, § 271(a) was amended in 1994 to add "offers to sell" to the list of prohibited activities. 108 Stat. 4988. Congress also made major revisions in legislation involving patents in 1980 in Pub. L. No. 96-517 (providing for administrative reexamination of patents to determine validity) and in 1982 in the Federal Courts Improvement Act (establishing the Federal Circuit to make patent law uniform). However, in spite of scholarly debate and alleged

Id.; Pub. L. No. 103-465 § 533, 108 Stat. 4988 (1994); Pub.
 L. No. 104-41, 109 Stat. 351 (1995).

dissension among members of the Federal Circuit about the doctrine (see Petitioner's Brief), Congress showed no intent to change existing decisional law dealing with equivalents, despite continual tinkering with the patent laws. Such legislative silence clearly manifests an intent, sub silentio, to preserve the status quo. In Square D Co. v. Niagra Frontier Tariff Bureau, Inc., 476 U.S. 409, 421 (1986), this Court rejected an attempt to overturn a 1922 decision of this Court on the basis of its alleged conflict with a 1948 overhaul of the relevant statute, stating:

Congress must be presumed to have been fully cognizant of this interpretation of the statutory scheme, which had been a significant part of our settled law for over half a century, and [yet] Congress did not see fit to change it when Congress carefully reexamined this area of the law.

In the instant case, as in Square D, Congress has engaged in a careful and continual reexamination of patent law where the doctrine of equivalents has been a significant part of "settled law" for over a century (and certainly since 1950) and has given no indication, by statutory wording, legislative history or otherwise, that a change to this settled doctrine was intended. This resounding silence can only be read as manifesting Congressional imprimatur on the doctrine of equivalents.

Petitioner also argues that as used in 35 U.S.C. § 112 ¶ 6<sup>16</sup> enacted as part of the 1952 Act, the term "equivalents"

evidences congressional intent to eliminate broad protection under the doctrine of equivalents. However, this provision was enacted not to affect the doctrine of equivalents, but to statutorily overturn Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946); In re Donaldson Co., 16 F.3d 1189, 1194 (Fed. Cir. 1994) (en banc). Further, the "equivalent" of 35 U.S.C. § 112 ¶ 6 is not related to the doctrine of equivalents. Pennwalt Corp. v. Durand-Wayland, 833 F.2d 931, 934 (Fed. Cir. 1987) (en banc) ("[s]ection 112, paragraph 6, plays no role in determining whether an equivalent function is performed by the accused device under the doctrine of equivalents"), cert. denied, 485 U.S. 961 (1988), and cert. denied, 485 U.S. 1009 (1988). Rather, 35 U.S.C. § 112 ¶ 6 defines literal infringement, and requires that a court find identity of the claimed function in the accused device. Id. If literal infringement or identity of function is not present, infringement may nevertheless still be found under the doctrine of equivalents. Id. Moreover, as Petitioner acknowledges, Congress was aware of the doctrine of equivalents when it enacted § 112 ¶ 6. Pet. Br. at 25; hence, it is presumed that Congress' failure to repudiate Graver Tank is tacit recognition of its continued viability. Johnson, 480 U.S. at 629; Lorillard, 434 U.S. at 580-81. That presumption has not been overcome.

If, as Petitioner asserts, the doctrine of equivalents is flawed and inconsistent with the patent statutes, Congress would certainly have addressed these alleged shortcomings in the last forty-five years:

> [T]he powers of Congress to legislate upon the subject of patents is plenary by the terms of the Constitution, and as there are no restraints on its exercise, there can be no

<sup>&</sup>quot;An element in a claim . . . may be expressed as a means or step for performing a specified function" and "such a claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

limitation of their right to modify [the patent laws] at their pleasure, so long as they do not take away the rights of property in existing patents.

McClurg v. Kingsland, 42 U.S. (1 How.) 202, 206 (1843). Since Congress has not acted, it must be assumed that the rule of Graver Tank and its predecessors is consistent with the 1952 Act. Johnson, 480 U.S. at 629 n.7. Also, since Congress has not interfered, this Court should abstain as well and not create new law by restricting access to or application of the doctrine of equivalents.

Petitioner contends that the doctrine of equivalents is inconsistent with the requirement of precise claiming required by § 112 of the 1952 Act, 17 and that this alleged imprecision promotes uncertainty. 18 In its decision below, the court carefully analyzed the argument raised by Petitioner, correctly concluding "[t]he Supreme Court explained that the doctrine is not inconsistent with the requirement for explicit claims." Pet. App. at 26a-27a. As Petitioner concedes, § 112 effected no substantive change from the claiming requirement of the Patent Act of 1870, eighty years before Graver Tank. See Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201

("requiring inventor to particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery"). This distinct claiming requirement was a restatement of the Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119 (requiring inventor to "particularly specify and point out the part . . . which he claims.") See also Markman, slip op. at 8. The familiarity of courts with the precise claiming principle was well known when Graver Tank was decided. See, e.g., Merrill v. Yeomans, 94 U.S. 568, 573 (1877); Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278-79 (1877); White v. Dunbar, 119 U.S. 47, 52 (1886); McClain v. Ortmayer, 141 U.S. 419, 423-24 (1891); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 419 (1908); General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938); Milcor Steel Co. v. George A. Fuller Co., 316 U.S. 143, 145-46 (1942); United Carbon Co. v. Binney & Smith Co., 317 U.S. 228. 236 (1942). Thus the 1952 Act added nothing to the statutory claiming requirement for precise claiming existing when this Court decided Graver Tank; nor, as discussed supra, has Congress acted to correct any alleged inconsistency between the doctrine of equivalents and the requirement for precise claims. Therefore the presumption that there is no inconsistency has not been rebutted.

Further, this Court reached its decision in *Graver Tank* over a dissent which raised that same argument, citing 35 U.S.C. § 33.<sup>19</sup> 339 U.S. at 613-14 (Black, J., dissenting). Clearly, this Court had in mind the possibility of tension

<sup>17 &</sup>quot;The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

Petitioner relies for support of its precise claiming arguments on the position of the United States as amicus curiae in Standard Indus., Inc., v, Tigrett Indus., Inc., No. 445, October Term 1969. It is now clear, however, that the United States has abandoned its earlier position, no longer believing that the doctrine of equivalents runs counter to the statutory requirement for precise claiming. See Brief for the United States as Amicus Curiae at 14 n. 2 herein.

An applicant "shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery."

between the statutory requirement for precise claiming and the doctrine of equivalents, and found no legal inconsistency. More fundamentally, however, the perceived "problem" is not with "uncertainty." "[A] clear and unambiguous [patent] claim [is] a rare occurrence." Autogiro Co. of Am. v. United States, 384 F.2d 391, 396 (Ct. Cl. 1978). Analytical laziness by competitors should not excuse facing realistically the determinative question "is there any real difference" and making the effort to candidly analyze the function/way/result and other objective tests of "insubstantial differences."

Petitioner contends that the doctrine of equivalents permits an "end run" around the administrative examination process of the PTO by enlarging the claims. That position is also foreclosed; this Court reached its decision in Graver Tank over a dissent which raised that same argument. 339 U.S. at 613-14 (Black, J., dissenting) ("the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office"). "To say that the doctrine of equivalents extends or enlarges the claims is a contradiction in terms. The claims - i.e., the scope of patent protection as defined by the claims - remain the same and application of the doctrine expands the right to exclude to 'equivalents' of what is claimed." Amicus Curiae Brief of United States at 15 (quoting Wilson Sporting Goods Co. v. David Geoffrey & Associate, 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)). The court below agreed. Pet. App. 30a. Further, the "scope" is not enlarged if courts do not go beyond the substitution of equivalent elements. Pet. App. 133a. (Nies, J., dissenting); Machine Co. v. Murphy, 97 U.S. 120, 125 (1878) (substantial equivalent same as thing itself).

Petitioner argues that only § 251 of the 1952 Act can expand patent claims through Patent Office reissue procedures.20 Unlike reissue, the purpose of the doctrine of equivalents is not to correct mistakes, but to prevent an infringer from making "unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law." Graver Tank, 339 U.S. at 607. Further, the patent reissue statutes enacted in 1832 (4 Stat. 577), 1836 (5 Stat. 117) and 1928 (45 Stat. 732) were nearly identical to the 1952 Act. 21 Nor did the 1952 Act change the types of errors for which reissue could be sought. In re Wadlinger, 496 F.2d 1200, 1207 n.7 (C.C.P.A. 1974) (Rich, J.); see also, Union Asbestos & Rubber Co. v. Paltier Corp., 298 F.2d 48, 50-52 (7th Cir. 1962). Moreover, this Court was well aware not only of the existence of the reissue statute, but also of the distinction between reissue and the doctrine of equivalents when it decided Graver Tank. See 339 U.S. at 614-16 (reissue adequately protects patentees without doctrine of equivalents) (Black, J., dissenting). Yet, this Court affirmed the doctrine in spite of the alleged tension with statutory reissue. No good reason has been advanced to depart from that precedent.

Reissue is designed to correct mistakes where a "patent is . . . deemed wholly or partially inoperative or invalid . . . by reason of the patentee claiming more or less than he had a right to claim." 35 U.S.C. § 251.

The 1952 Act provided expressly for broadening reissues, which previously had been recognized judicially. See Topliff v. Topliff, 145 U.S. 156 (1892).

The doctrine of equivalents is not, as Petitioner suggests, a different kind of infringement. There is only one cause of action under 35 U.S.C. § 271: for infringement. There has never been a decisional or statutory distinction between the legal effect of literal infringement and infringement under the doctrine of equivalents. The doctrine of equivalents is not a separate cause of action; "[p]atentees . . . are entitled in all cases to invoke to some extent the doctrine of equivalents." Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 556 (1870). The patent grant has always been interpreted as extending to substantial equivalents ab initio. See, e.g., Machine Co. v. Murphy, 97 U.S. 120, 125 (1878) ("Authorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself."). The initial patent grant includes all inventions literally defined by the patent claims, as well as those having only insubstantial differences from the literally claimed invention - in the eyes of the law, these are the same thing. See Winans, 56 U.S. (15 How.) at 343 ("patentee . . . deemed to claim every form in which his invention may be copied.") 22

II. THE DOCTRINE OF EQUIVALENTS SHOULD BE BROADLY APPLIED AND AVAILABLE TO PATENTEES IN EVERY PATENT INFRINGEMENT ACTION

"The United States Patent System is one of the basic supports of our American economy and it has done more toward the expansion and development of our resources and industry than any other thing." Mitman, Economic Aspects of Inventions & Legal Monopolies, 26 Miss. L.J. 149, 149 (1955). Because of this value, this Court has acknowledged that patents should be given a generous construction:

Patents for inventions are not to be treated as mere monopolies and, therefore, odious in the eyes of the law; but they are to receive a liberal construction, and under the fair application of the rule, ut res magis valeat quam pereat [that the thing may rather have effect than be destroyed], are, if practicable, to be so interpreted as to uphold and not to destroy the right of the inventor.

Turrill v. M.S. & N. I. R.R., 68 U.S. (1 Wall.) 491, 509 (1863). See also H. SCHWARTZ, PATENT LAW AND PRACTICE 4 (2d ed. 1995) (Congress and courts have continued to enhance the value of patents).

While Petitioner seeks complete abolition of the doctrine of equivalents,<sup>23</sup> this Court has confirmed its continued viability: "[the patent claim] functions to forbid not only exact copies of an invention, but products that go to

Even the Patent Office has always considered patent claims to include equivalents: "[a]n inventor is always entitled to equivalents -- that is to say, to devices which operate in substantially the same way to accomplish substantially the same result in a combination. Ex parte Cook, Commisioner's Decisions 81, 82 (1890).

Notably, none of the judges in the court below or amici herein favor totally voiding the doctrine of equivalents.

'the heart of the invention but avoid the literal language of the claim by making a noncritical change." Markman, slip op. at 2.24 The doctrine as restated by the court below adheres to the fundamental purpose of its creation (fairness to the patentee), while lending itself to adaption to everchanging future innovation. G.M. Hoffman, With Hilton Davis The Federal Circuit Takes the Doctrine of Equivalents Back to Its Roots, 77 J. PAT. & TRADEMARK SOC'Y 763. 770 (1995). Also notable is the change of position of the United States, from opposing the doctrine of equivalents in 1969, Brief of Amicus Curiae of the United States in Standard Industries, Inc. v. Tigrett Industries, Inc., 397 U.S. 586 (1970), to its present position that "a clearly defined doctrine of equivalents serves the goals of the Patent Act." Brief of Amicus Curiae United States at 14 herein. The United States also seeks to encourage foreign countries "to afford patent protection commensurate with that provided in the United States by the doctrine of equivalents." Id. at 1-2.25

The court below emphasized that the present case presented "an opportunity to restate - not to revise - the test for infringement under the doctrine of equivalents." Pet. App. 6a. While Petitioner attributes the genesis of the doctrine to the Federal Circuit, the modern statement of the principle traces to this Court's decision in *Graver Tank*. See also Pet. App. 6a-8a. That decision did not spring forth unheralded, but is simply a well-reasoned unexceptional restatement of the doctrine of equivalents established by a long line of prior precedent. 26 And the doctrine also has roots

While this Court has not previously used the "heart of the invention" and "noncritical change" language, Respondent reads this phraseology as restating the traditional *Graver Tank* tests. Cf. Aro Mfg. Co. v. Convertible Top Replacement Co., Inc., 365 U.S. 336, 345 (1961) ("there is no legally recognizable or protected . . . "heart" of the invention in a combination patent.")

<sup>&</sup>quot;Foreign patents are often so restricted in their protection that they are of insignificant or no commercial value." B. Pravel, Why the United States Should Adopt the First-to-File System for Patents, 22 ST. MARY'S L.J. 797, 807 (1991). "Japan has virtually no Doctrine of Equivalents" and is "a good example of why the Doctrine of Equivalents is so important." Sean T. Moorhead, Note, The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement or the Second Prong of Patent Infringement Charges?, 53 OHIO ST. L.J. 1421, 1444 n.125 (1992).

See Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126 (1942); Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211 (1940); Keystone Driller Co. v. Northwest Eng'g Corp., 294 U.S. 42 (1935); Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929); Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904); Coupe v. Royer, 155 U.S. 565 (1895); Belding Mfg. Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894); Royer v. Schultz Belting Co., 135 U.S. 319 (1890); Imhaeuser v. Buerk, 101 U.S. 647 (1879); Water-Meter Co. v. Desper, 101 U.S. 332, 337 (1879); Machine Co. v. Murphy, 97 U.S. 120, 125 (1878); Ives v. Hamilton, 92 U.S. 426 (1875); Sewell v. Jones, 91 U.S. 171 (1985); Duff v. Sterling Pump Co., 107 U.S. 636 (1883); Roberts v. Ryer, 91 U.S. 150 (1875); Brown v. Guild, 90 U.S. (23 Wall.) 181 (1874); Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874); Rees v. Gould, 82 U.S. (15 Wall.) 187 (1871); Seymour v. Osborne, 78 U.S. (11 Wall.) 516 (1870); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868); Case v. Brown, 69 U.S. (2 Wall.) 320 (1864); Burr v. Duryee, 68 U.S. (1 Wall.) 531 (1864); McCormick v. Talcott, 61 U.S. (20 How.) 402 (1858); Winans v. Denmead, 56 U.S. (15 How.) 330 (1853); Sloat v. Spring, 22 F. Cas. 330, 334 (C.C.E.D. Pa. 1850) (No. 12,948a); Gray v. James, 10 F. Cas. 1015 (C.C.D. Pa. 1817) (No. 5,718); Odiorne v. Winkley, 18 F. Cas. 581 (C.C.D. Mass. 1814) (No. 10,432); Reutgen v. Kanowrs, 20 F. Cas. 555 (C.C.D. Pa. 1804) (Washington, Justice).

in English common law.<sup>27</sup> An acknowledgement of equivalency can be found in a patent granted by English Parliament in 1695. CHRISTINE MACLEOD, INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM 1660-1800 73 (1988).

As this history demonstrates, the doctrine of equivalents as reiterated by Graver Tank was not revolutionary, nor is it revolutionary today as reiterated by the Federal Circuit - no principle is more ingrained in patent jurisprudence. The holding of the court below correctly restates the doctrine's basic principle: application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard." Pet. App. 9a. This formulation is a good one. R.A. Machonkin, Note, Markman v. Westview Instruments, Inc. & Hilton Davis Chemical Co. v. Warner-Jenkinson Co.: The Federal Circuit Gets Its Law & Its Facts Straight, 9 HARV. J.L. & TECH. 181, 198 (1996) [hereinafter Machonkin]. In Graver, this Court stated the test to be "whether under the circumstances the change was so insubstantial" as to make invocation of the doctrine justified. 339 U.S. at 610. Nor was this "substantiality of the differences" standard novel. See, e.g., Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) ("substantial departure": "substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself."); Singer Mfg. Co. v. Cramer, 192 U.S. 265, 286 (1904) ("substantial identity"); McCormick v. Talcott, 61 U.S. (20 How.) 402, 405 (1858) ("substantially different"); Duff v. Sterling Pump Co., 107 U.S. 636, 639 (1883) ("substantial departure"). And if the differences between two devices or processes are only insubstantial, then the devices "are the same, even though they differ in name, form, or shape." Graver Tank, 339 U.S. at 608 (quoting Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)).

The basis for the "insubstantial difference" test justifying application of the doctrine of equivalents is clearly articulated by the court below, and is soundly grounded in this Court's precedent. Pet. App. 6a-7a. The doctrine evolved as a protection for patent owners against would-be imitators who, while not misappropriating every literal detail of the patent would "make unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law." Graver Tank, 339 U.S. at 607. This Court acknowledged that to prohibit only outright duplication "would place the inventor at the mercy of verbalism, . . . would deprive him of the benefit of his invention and would foster concealment rather than disclosure of inventions, which is one of the primary purposes of the patent system." 339 U.S. at 607. It was in response to this threat that the doctrine of equivalents evolved, to prevent "a fraud on a patent" by "prevent[ing] an infringer from stealing the benefit of an invention." 339 U.S. at 608.

Hence, the "insubstantial difference" standard was developed to test whether the changes that an infringer has made are so minor as to deprive the inventor of the benefit of his invention. In the present case, as described *supra*, Petitioner made a slight change in the pH from 6 to 5, which had no substantial or critical effect on the patented process.

See, e.g., Heath v. Umwin, 2 Websters Patent Cases 296 (H.L. 1855); Stead v. Anderson, 1 Websters Patent Cases 151 (C.P. 1847); Hill v. Thompson And Forman, 1 Websters Patent Cases 239 (C.P. 1818).

In fundamental and practical terms, the "insubstantial difference" test simply asks whether there is any real difference between what is patented and the accused device or process. If the differences are only insubstantial, the patented invention and the accused device or process are, "in law, the same thing, and therefore within the coverage of the patent." Sanitary Refrigerator, 280 U.S. at 42. If, however, the differences are more than insubstantial, the alleged infringer escapes liability. The court below faithfully followed, restated and applied this Court's Graver Tank "insubstantial difference" test as the touchstone under the doctrine of equivalents: "no change is appropriate in the common law of equivalency as developed by the Supreme Court." Pet. App. 33a. (Newman, J., concurring)

It has not been shown that the court below departed from this Court's established precedent by adopting and applying the "insubstantial difference" standard. Nor has there been shown sound reason to abandon the Graver Tank test. See Patterson v. McLean Credit Union, 491 U.S. 164, 173-74 (1988) (overruling precedent justified only where weakened conceptual underpinnings, irreconcilable competing legal doctrines or policies, inherent confusion created by an unworkable decision, direct obstacles to important objectives in other laws or inconsistency with sense of justice or social welfare). This Court should continue the doctrine unfettered, as suggested in Markman.

In following this Court's precedent, the court below also clearly articulated the standards for application of the "insubstantial difference" test. It first correctly recognized that the trier of fact may consider any relevant admissible evidence probative of infringement under the doctrine of equivalents. Pet. App. 10a, 17a ("all evidence relevant to the substantiality of the differences"). That follows from this

Court's instruction that "[a] finding of equivalence is a determination of fact. Proof may be made in any form." Graver Tank, 339 U.S. at 605, 609 ("Equivalence, in the patent law, is not the prisoner of a formula."); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 406, 421 (1908) (all the circumstances to be considered in determining equivalents). Clearly, this Court broadly viewed the types of evidence that, when weighed together, may bear on whether an accused device or process is the equivalent of that patented. Pet. App. 11a.

The court below then delineated exemplary, although not exclusive, evidence appropriate to demonstrate "insubstantial differences." It noted that in some instances "it is often enough to assess whether the claimed and accused products or processes include substantially the same function, way and result." Pet. App. 9a. 28 This classic "function-way-result test often suffices to assess equivalency because similarity of function, way, and result leaves little room for doubt that only insubstantial differences distinguish the accused product or process from the claims." Pet. App. 10a. The court below appropriately followed *Graver Tank*, 339 U.S. at 608, in applying this principle:

a patentee may invoke this doctrine [of equivalents] to proceed against the producer of a device "if it performs substantially the same

In the present case, the trial court's instructions, unchallenged by Petitioner, were narrowly tailored and correctly focused the jury's attention on application of the function-way-result, which was the primary evidence of equivalence that the parties offered. Pet. App. 18a, 21a-25a, 29a, 70a n.1, 104a-106a; See Biodex Corp. v. Loredan Biomedical Inc., 946 F.2d 850, 854 (Fed. Cir. 1991); H. SCHWARTZ, PATENT LAW AND PRACTICE at 143 (1995).

function in substantially the same way to obtain the same result." Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42. The theory on which it is founded is that "if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape." Machine Co. v. Murphy, 97 U.S. 120, 125.

The court below further noted that "evidence beyond function, way, and result is also relevant to the doctrine of equivalents," addressing factors specifically identified and relied on in Graver Tank which the fact finder must consider, if present. Pet. App. 10a. Thus a relevant factor is "whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was." Pet. App. 11a (quoting Graver Tank, 339 U.S. at 609). Evidence of copying is relevant (but not required), because copying may raise an inference that "the copyist, presumably one of some skill in the art, has made a fair copy with only insubstantial changes." Pet. App. 11a. This derives directly from Graver Tank: "[w]ithout some explanation or indication that [the infringing product] was developed by independent research, the trial

court could properly infer that the accused flux is the result of imitation rather than experimentation or invention." 339 U.S. at 612.30

Once a "competitor becomes aware of a patent, and attempts to design around its claims, the fact finder may infer that the competitor, presumably one of ordinary skill in the art, has designed substantial changes into the new product to avoid infringement." Pet. App. 13a.31 This factor is consistent with and nothing more than application of the Graver Tank consideration of the presence or absence of "evidence of any kind to show that [the infringing product or process] was developed as the result of independent research or experiments." 339 U.S. at 611. It also fairly balances the inference that may arise from copying, and therefore favors the accused infringer. The court below noted that independent development, as addressed in Graver Tank, is also relevant to refute a charge of copying. Pet. App. 14a. Consequently, all of the factors which the court below identified as relevant to proof of "insubstantial differences" find their source in Graver Tank and its predecessors.

The court below also emphasized that the test of "insubstantial differences" is objective as viewed from the

The court below correctly concluded that the range of infringing elements should not be limited solely to those substitutes known or contemplated by the inventor when the patent issued. Pet. App. 31a (citing Sanitary Refrigerator Co., 280 U.S. at 40-43); See also SRI Int'l. v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1121 (1985) (en banc) (no requirement patentee specify every possible future embodiment of invention).

As described supra, it was only through the unauthorized use of Respondent's confidential information that Petitioner was able to finally obtain, after initial failure, a viable and infringing process. Thus, there was evidence from which the trier of fact could infer that Petitioner copied Respondent's process, resulting in only insubstantial differences from the patented process. Petitioner proffered evidence that its process was independently developed. J.A. 125, 129.

Petitioner claimed it was not aware of Respondent's patent until after it had developed its infringing process. J.A. 125. Hence, this factor is not applicable in the instant case.

vantage point of one of ordinary skill in the relevant art. Pet. App. 10a. This objective standard follows from the Graver Tank test of "insubstantial differences." 339 U.S. at 609 ("whether persons reasonably skilled in the art would have known"). This approach is also consistent with and follows other areas of patent law where the courts apply an objective "person of ordinary skill in the art" standard. See, e.g., 35 U.S.C. § 103 (obviousness); 35 U.S.C. § 112 (enablement).

The court below also held that "[t]he trial judge does not have discretion to choose whether to apply the doctrine of equivalents when the record shows no literal infringement." Pet. App. 17a-18a. As demonstrated infra, the court in a jury trial may not decide the issue where the matter is not ripe for judgment as a matter of law.

Also, as the court below recognized, "every patent owner is entitled to invoke the doctrine of equivalents." Pet. App. 16a. This proposition is well supported by this Court's precedent. See Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 556 (1870) ("Patentees . . . are entitled in all cases to invoke to some extent the doctrine of equivalents."). In Graver Tank, this Court noted that the doctrine of equivalents "continues today ready and available for utilization when the proper circumstances for its application arise." 339 U.S. at 608. This Court's most recent

acknowledgment of the doctrine in Markman likewise placed no restrictions on its potential availability to a patent owner.

While the doctrine of equivalents should be broadly applied to insure that the protection of the patent grant is not converted "into a hollow and useless thing," the court below has not disturbed or narrowed the traditional limits imposed on the doctrine. As the court below correctly recognized, the doctrine of "prosecution history estoppel" may be "invoked as a limitation to infringement under the doctrine of equivalents." Pet. App. 24a; See Keystone Driller Co. v. Northwest Eng'g. Corp., 294 U.S. 42, 48 (1935); Smith v. Magic City Kennel Club, 282 U.S. 784, 790 (1931). This doctrine precludes a patentee from recapturing, through the doctrine of equivalents, matter which was intentionally surrendered during prosecution. Read Corp. v. Portec, Inc., 970 F.2d 816, 824 (Fed. Cir. 1992). To determine whether an estoppel exists limiting application of the doctrine of equivalents, "a close examination must be made as to, not only what was surrendered, but also the reason for such a surrender." Pet. App. 24a. Thus, an amendment to a claim, to limit potential equivalents, must demonstrate a disclaimer of subject matter required by the Patent Office to be disavowed as condition of the grant. Sutter v. Robinson, 119 U.S. 530, 541 (1886); See also Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136-37 (1942); Garrett Corp. v. United States, 422 F.2d 874, 882 (Ct. Cl. 1970) ("assumed plaintiff did not intend to narrow its scope [of claim] any more than necessary to distinguish over the art").

In Graver Tank, the court relied upon testimony of specialists familiar with the problems involved, technical literature, and disclosures of prior art. 339 U.S. at 611-12.

The "proper circumstances" arise when "insubstantial differences" are involved. Graver Tank, 339 U.S. at 607 ("[A] patentee may invoke this doctrine to proceed against the producer of a device if (continued...)

<sup>&</sup>lt;sup>30</sup>(...continued)

it performs substantially the same function in substantially the same way to obtain the same result.").

Here there was no such intentional surrender or disclaimer for pHs less than 6.34

The decision below is also consistent and does not alter the general rule that the doctrine of equivalents may be limited by the prior art. See Computing Scale Co. of Am. v. Automatic Scale Co., 204 U.S. 609, 617 (1907); Wilson Sporting Goods v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990) (analyzing hypothetical claim to test validity under doctrine of equivalents).

Petitioner argues that the doctrine should be applied only in cases where the infringer acts in subjective bad faith. The court below emphasized that invocation of the doctrine of equivalents does not depend on a threshold showing of bad faith, evil intent or other subjective factors. Pet. App. 12a. This Court in *Graver Tank* also reached its decision over a dissent which raised this same argument. See Graver Tank,

339 U.S. at 612-13 (Black, J., dissenting). Infringement, whether literal or under the doctrine of equivalents, has never depended upon the subjective intent of the infringer nor any other "equitable" factors. See, e.g., Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 478 (1974) ("This protection goes not only to copying the subject matter, . . . but also forbids independent creation."). There is a constitutional patent right; there is no such right to infringe a patent, knowingly or otherwise.

While Petitioner and its supporting amici argue strenuously that the doctrine of equivalents harms industry and innovation, they offer no specific evidence that the doctrine negatively impacts any specific industry. See Pet. App. 33a. (Newman, J., concurring) ("The doctrine of equivalents has neither greatly excited the centers of legal scholarship, nor seriously stirred action-oriented industry."). "[T]he doctrine of equivalents, on balance, serves the interest of justice and the public interest in the advancement of technology, by supporting the creativity of originators while requiring appropriators to adopt more than insubstantial technologic change." Pet. App. 43a. (Newman, J., concurring).

In any event, these policy considerations are most both Congress and this Court have endorsed the continued existence of the doctrine of equivalents. If the question at issue turns on the balancing of competing public policies, any change in the law is best left to Congress:

The choice we are urged to make is a matter of high policy for resolution within the

In the present case, the inventors amended the claims to recite "a pH from approximately 6.0 to 9.0" to avoid the prior art Booth patent which taught a process operating at a pH higher than 9.0. "This amendment surrendered pHs above 9.0, but did not bar [Respondent] from asserting equivalency to processes such as [Petitioner s] operating sometimes at a pH below 6." Pet. App. 24a. Thus, Respondent was not recapturing subject matter surrendered during patent prosecution. Rather, Petitioner's pH found to be equivalent was on the opposite end of the range from the prior art. See C.A. Jt. App. 2892. Nor was the lower limit added to prevent "foaming." As described supra, the patented process was successfully tested to pH values as low as 2.2 [six thousand times more acidic than pH 6] with no effect on the process because of "foaming." These findings should not be disturbed. See Graver Tank 1, 336 U.S. at 275.

The essence of the doctrine of equivalents is "fraud on a patent," Graver Tank, 339 U.S. at 608, not fraud by the accused infringer. See Pet. App. 12a.

legislative process after the kind of investigation, examination, and study that legislative bodies can provide and courts cannot. That process involves the balancing of competing values and interests, which in our democratic system is the business of elected representatives. Whatever their validity, the contentions now pressed on us should be to the political branches of the Government, the Congress and the Executive, and not to the Courts.

Diamond v. Chakrabarty, 447 U.S. 303, 317 (1980).

# III. THE ISSUE OF INFRINGEMENT UNDER THE DOCTRINE OF EQUIVALENTS IS AN ISSUE OF FACT TO BE SUBMITTED TO THE JURY IN A JURY CASE

The court below correctly held that "infringement under the doctrine of equivalents is an issue of fact to be submitted to the jury in a jury trial with proper instructions, and to be decided by the judge in a bench trial." Pet. App. 17a, 25a. This Court has made clear in its Seventh Amendment jurisprudence that the right to trial by jury is sacred and should be jealously protected: "[m]aintenance of the jury as a fact-finding body is of such importance and occupies so firm a place in our history and jurisprudence that any seeming curtailment of the right to a jury trial should be scrutinized with the utmost care." Dimick v. Schiedt, 293 U.S. 474, 486 (1935); Jacob v. City of New York, 315 U.S. 752, 752-53 (1942) ("The right of jury trial in civil cases at common law is a basic and fundamental feature of our system of federal jurisprudence which is protected by the

Seventh Amendment. A right so fundamental and sacred to the citizen, whether guaranteed by the Constitution or provided by statute, should be jealously guarded by the courts.").

The right of jury trial preserved under the Seventh Amendment "is the right which existed under the English common law when the Amendment was adopted." Baltimore & Carolina Line, Inc. v. Redman, 295 U.S. 654, 657 (1935). The existence of the right is determined by the two part "historical test": (1) "whether we are dealing with a cause of action that either was tried at law at the time of the Founding or is at least analogous to one that was"; and (2) "whether the particular trial decision must fall to the jury in order to preserve the substance of the common-law right as it existed in 1791." Markman, slip op. at 5.

As to the first inquiry, "there is no dispute that infringement cases today must be tried to a jury." Markman, slip op. at 6. The second inquiry involves whether a particular issue within a jury trial, here the doctrine of equivalents, is itself a jury issue. Id. This inquiry is resolved by reference to historical evidence that the issue was regarded as a jury question under English practice. Id. There is evidence that early English patent cases discussed the principle of equivalents in the context of jury trials. See Arkwright v. Nightingale, 1 Websters Patent Cases 60, 64 (C.P. 1785); Bramah v. Hardcastle, 1 Carpmael 168, 171 (K.B. 1789). Hence, there existed the direct antecedent of the modern doctrine of equivalents in English law prior to 1791.

This historical evidence is buttressed by early cases from this Court. In *Tucker v. Spalding*, 80 U.S. (13 Wall.) 453, 455 (1871), this Court acknowledged:

Whatever may be our personal opinions of the fitness of the jury as a tribunal to determine the diversity or identity in principle of two mechanical instruments, it cannot be questioned that when the plaintiff, in the exercise of the option which the law gives him, brings his suit in the law in preference to the equity side of the court, that question must be submitted to the jury, if there is so much resemblance as raises the question at all.

In Winans, 56 U.S. (15 How.) at 344, the jury was assigned the task of deciding whether the defendant's product was so close to the patentee's "as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention." The allusion to "mode" and "result" clearly point to application of the doctrine of equivalents. The Court then held: "[w]hether, in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense above explained [i.e., equivalents], is a question for the jury, and the court erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative." 56 U.S. (15 How.) at 544. See also Battin v. Taggert, 58 U.S. (17 How.) 74, 85 (1854) ("questions of fact . . . such as the identity of the machine used by the defendant with that of the plaintiff's, or whether they have been constructed and act on the same principle," are questions "which come within the province of a jury"); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868) (whether one compound of given proportions is substantially the same as another compound varying in the proportions whether they are substantially the same or substantially different - is a question of fact and for the jury); Turrill v. M.S. & N.I.R.R. Co., 68 U.S. (1 Wall.) 491 (1863) ("[T]here was an important question of fact which should have been left to the jury, whether the machines introduced by the defendants . . . were substantially the same as the machine of the patentee."); Rees v. Gould, 82 U.S. (15 Wall.) 187, 192 (1871) (discussing proper jury instructions on equivalency). See also Royer v. Schultz Belting Co., 135 U.S. 319 (error not to submit question of equivalence of two machines to jury upon proper instructions); cf. Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 35 (1929) (equivalency question of law where facts undisputed).

In Winans, this Court also instructed "it is the duty of courts and juries to look through the form for the substance of the invention." 56 U.S. (15 How.) at 343 (emphasis added). The acknowledgment that juries have a duty to look for the "substance of the invention", i.e. the "heart of the invention" (see Markman, slip op. at 2) clearly designates the doctrine of equivalents as a jury question.

Notably, there is a complete absence of historical evidence suggesting that the issue of the doctrine of equivalents is for the court alone. No prior decision of this Court has suggested that the equivalence issue is one of law. Cf. Markman (clear historical precedent claim construction for court, not jury). To the contrary, in Graver Tank, 339 U.S. at 609-10, this Court noted that "[a] finding of equivalence is one of fact." Cf. United States v. Francesco, 725 F.2d 817, 821 (1st Cir. 1984) (question whether cocaine compound "equivalent" under Drug Control Act "issue of fact to be determined by the jury."). The unambiguous designation of the equivalency issue as a question of fact clearly shows that this Court has not considered it as one of law or as mixed fact and law.

In addition to historical evidence, functional considerations support juries as the arbiter of equivalents in patent infringement actions. See Markman, slip op. at 18. The inquiries underlying equivalency: function/way/result, interchangeability, designing around, and copying, are intensely fact-dependent, reflecting scientific facts that exist in the real world. Machonkin at 199. There is no evidence that judges, to the exclusion of juries, regularly resolve issues analogous to the doctrine of equivalents, or have any special expertise to do so. See Slocum v. New York Life Ins. Co., 228 U.S. 364, 388 (1913) (applicability of the Seventh Amendment "not a question of whether the facts are difficult or easy of ascertainment."). Further, credibility is often at issue in the resolution of equivalents. In Graver Tank, this Court noted "[1]ike any other issue of fact, final determination [of equivalency] requires a balancing of credibility, persuasiveness and weight of evidence." 339 U.S. at 609-10. "Credibility determinations, the weighing of evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge . . . . " Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986). In practice, if the question of equivalents were entirely removed from the jury, there would be nothing for it to decide on the issue of infringement - a result contrary to the rule that the jury decides infringement. Winans, 56 U.S. (15 How.) at 337.

Finally, in contrast to claim interpretation, uniformity in the treatment of a given patent is of no moment where the doctrine of equivalents is concerned, since no conceivable substantiality of difference determination could achieve uniformity. Machonkin at 199. For example, in one hypothetical case, the issue may be whether a patented three-bladed ceiling fan having a solid support rod is the equivalent

of one having a hollow rod. See Markman, slip op. at 2 n.1 (citing H. SCHWARTZ, PATENT LAW AND PRACTICE at 81-82 (2d ed. 1995)). In another case involving the same hypothetical patent, the issue may be whether a four-bladed fan is the equivalent of a three-bladed fan. Clearly, the prior equivalency determination provides no guidance for uniform treatment of the patent in the latter case, although ordinary principles of res judicata and collateral estoppel may govern equivalency questions in future litigation. See, e.g., Blonder-Tongue Lab., Inc. v. University of Ill. Found., 402 U.S. 313 (1971).

Nor does the court abandon its gatekeeper role where the jury determines equivalency. Cf. Daubert v. Merrell Dow Pharmaceuticals, Inc., - U.S. -, 113 S. Ct. 2786 (1993). Legal questions of sufficient and admissible evidence must still be decided. Pet. App. 17a. Also, the trial court may dispose of evidentially unsupported charges of equivalence through judgments as a matter of law.

Where equivalency is at issue, this Court has drawn no distinction between its submission to judge or jury. In Machine Co. v. Murphy, this Court stated:

the correct rule being that, in determining the question of infringement, the court or jury, as the case may be, are not to judge about similarities or differences by the names of things, but are to look at the machines or their several devices or elements in the light of what they do, or what office or function they perform, and how they perform it, and to find that one thing is substantially the same as another, if it performs substantially the same

function in substantially the same way to obtain the same result . . .

97 U.S. 120 (1878) (relied upon in *Graver Tank*, 339 U.S. at 608) [emphasis added]. It is thus clear that the resolution of equivalency, and in particular resolution of function/way/result, is not restricted to the court, but may be determined by the jury.

Some amici argue that equivalency should be taken from the jury and decided by the court as a matter of law as part of the Markman patent claim construction process, arguing this will improve claim interpretation certainty. It is difficult to see, however, how pre-litigation certainty of claim boundaries will be promoted by determination of equivalents by the court, rather than the jury. Assuredly, Petitioner cites no precedent in support of its assertion. Moreover, as shown supra, where a material issue of equivalency exists, the court may not summarily define the scope of possible equivalent devices or processes.36 See also G. CURTIS, A TREATISE ON THE LAW OF PATENTS § 310 at 405 (4th ed. 1873) ("whether one thing is a mechanical equivalent for another is a question for the jury [to be determined by] whether the contrivance used by the defendant is used for the same purpose, performs the same duties, or is applicable to the same object, as the contrivance used by the patentee"). This Court in Winans v. Denmead, 56 U.S. (15 How.) 330, 337 (1853), allocated the fundamental responsibilities of judge and jury in assessing the issue of patent infringement:

On such a trial [for infringement], two questions arise. The first is, what is the thing patented; the second, has the thing been constructed, used or sold by the defendants. The first is a question of law, to be determined by the court, construing the letters patent, and the description of the invention and specification of claim annexed to them. The second is a question of fact, to be submitted to a jury.

The determinative question then becomes, within which of these two inquiries does resolution of the doctrine of equivalents lie? The answer is the second, and Petitioner concurs. Pet. Rep. Br. at 2 n.1.

In Royal Typewriter Co. v. Remington Rand, Inc., 168 F.2d 691, 692 (2d Cir. 1948) (cited in Graver Tank and relying on Winans), Judge Learned Hand noted that the doctrine of equivalents is applied "after all aids to interpretation have been exhausted, and the scope of the claims has been enlarged as far as the words can be stretched . . . . " Thus equivalents are considered as a separate inquiry only after the claim construction step is completed, and not as part of it.

In the context of a patent, the "construction" of a claim is directed to ascertaining the meaning of claim terms (see Markman), not to defining whether an accused device or process is the equivalent of that claimed. In Silsby v. Foote, 55 U.S. (14 How.) 218, 225 (1852), this Court noted "not the construction of the claim, strictly speaking, but the application of the claim, should be left to the jury." Thus the Court carefully distinguished the question of the meaning of the words of the patent – a legal issue – from the factual question of how the particular machines would work,

In the present case, there were no contested issues of meaning of claim terms requiring a *Markman*-type legal claim term construction by the trial court.

i.e. what particular parts produce the claimed result, a jury issue.

Likewise, in *Bischoff v. Wethered*, 76 U.S. (9 Wall.) 812, 815 (1870), this Court also distinguished between claim construction and claim comparison to determine infringement:

"[t]his view of the case is not intended to, and does not, trench upon the doctrine that the construction of written instruments is the province of the court alone. It is not the construction of the instrument but the character of the thing invented which is sought in questions of identity and diversity of inventions."

Thus the Court explicitly differentiated the job of interpreting the patent language ("construction of the instrument") from the separate job of the jury of deciding, as a factual matter, whether the infringer's product met the description of the patent thus interpreted ("character of the thing invented"). The reference to "identity" and "diversity" also shows that the Court was focusing on issues of similarity or difference as outside the patent construction process, thus leaving the task of comparing to determine whether insubstantial differences exist, which is the essence of the doctrine of equivalents, to the jury.

In Coupe v. Royer, 155 U.S. 565, 579 (1895), this Court stated "the court defines the patented invention as indicated by the language of the claims; the jury judge whether the invention so defined covers the art or article employed by the defendant." Again the Court clearly separated the judge's role of patent construction ("defines") from the jury's role to determine whether the patent "covers" the accused process or device.

There is another important difference which distinguishes the claim construction inquiry from the claim application inquiry. In the first instance, the meaning of claim terms is construed by reference to the claims, the specification, the prosecution history, and expert testimony. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979 (1995), aff'd, - U.S. - (1996) (citing, inter alia, Winans, 56 U.S. (15 How.) at 338; Graham, 383 U.S. at 33; U.S. Indus. Chems., Inc. v. Carbide & Carbon Corp., 315 U.S. 668, 678 (1942)). However, the claim may not be interpreted in light of the accused device. SRI Int'l. v. Matsushita Elec. Corp. of Am., 775 F.2d 1107, 1118 (Fed. Cir. 1985) (en banc). In contrast, "what constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case." Graver Tank, 339 U.S. at 608. This is determined by assessing whether there are insubstantial differences between the claim and the accused device or process. Id. Thus, the first step of the Winans inquiry of claim construction excludes consideration of the accused device or process, while the second Winans step requires consideration of the accused device or process. Further, since "[a] finding of equivalence is a determination of fact," Graver Tank, 339 U.S. at 609, it cannot be part of the first Winans inquiry, since that inquiry is a question of law under Markman, and therefore it must form part of the second inquiry. Finally, since equivalence "requires a balancing of credibility, persuasiveness and weight of evidence," the issue cannot be one of law because determinations of credibility and evidence weighing are for the jury in a jury case. Pet. App. 17a; Tennant v. Peoria Pekin Ry., 321 U.S. 29, 35 (1944).

The proper analysis does not, as some argue, require exact ascertainment of the absolute hypothetical outer boundary of claim equivalents as part of the legal claim term construction inquiry, followed by testing whether the accused product or process lies within or without that hypothetical boundary. Rather, the proper factual inquiry is whether the real world differences between the claim (after claim term definition by the court) and the accused product or process are "insubstantial." That inquiry is for the jury as shown supra.

That the doctrine of equivalents should be decided as a matter of law where disputed factual issues exist is also expressly foreclosed by Graver Tank, where this Court found that the decision below "should not be disturbed unless clearly erroneous." 339 U.S. at 604. The reference to the "clearly erroneous" standard of review indicates that the court considered the equivalency issue to be purely factual. See Insta-Foam Prods., Inc. v. Universal Foam Sys., Inc., 906 F.2d 698, 702 (Fed. Cir. 1990). If the Court had considered the issue one of law, it would have invoked de novo review, which it did not. Cf. Markman.

Nor is the doctrine of equivalents "equitable" as opposed to "legal", requiring its determination by the court alone. Pet. App. 19a-20a. "Equity" applied to the doctrine of equivalents means only "general fairness." Things Remembered, Inc. v. Petrarca, — U.S. —, 116 S. Ct. 494, 499 (1995) (Ginsberg J., concurring). Nowhere in Graver Tank (or its predecessors) is there any suggestion that the doctrine of equivalents sounds in equity, and the traditional trappings of an equitable cause, such as the subjective intent of the infringer, are notably lacking. Pet. App. 16a. See Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 478

(1974). Rather, this Court "credited the origin of the doctrine of equivalents to its own decision in Winans v. Denmead - a case at law, not equity. See Graver Tank, 339 U.S. at 608; Winans v. Denmead, 56 U.S. (15 How.) at 338." Pet. App. 16a. Also, the fact that courts prior to Graver Tank charged juries on the issue of equivalents answers any supposition that the doctrine is only available in equity. See, e.g., Winans v. Denmead, 56 U.S. (15 How.) 330, 344 (1853); Battin v. Taggert, 58 U.S. (17 How.) 74, 85 (1854); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868); Turrill v. M.S. & N.I.R.R. Co., 68 U.S. (1 Wall.) 491 (1863); Rees v. Gould, 82 U.S. (15 Wall.) 187, 192 (1871); Silsby v. Foote, 55 U.S. (14 How.) 218, 225 (1852); Bischoff v. Wethered, 76 U.S. (9 Wall.) 812, 815 (1870); Coupe v. Royer, 155 U.S. 565, 579 (1895); Royer v. Schultz Belting Co., 135 U.S. 319 (1890).37

The Constitution, Article I, § 8, cl. 8 authorizes Congress "[t]o promote the progress of Science and useful Arts..." Indeed, "[t]he powers of Congress to legislate upon the subject of patents is plenary by the terms of the Constitution, and as there are no restraints on its exercise..." McClurg v. Kingsland, 42 U.S. (1 How.) 202, 206 (1843). Thus Congress may, if it chooses, maintain, modify or expand the doctrine of equivalents. It may also expand the right to jury trial to particular issues. See 9 C. WRIGHT & A.

Even if this Court were to deem the application of the doctrine to be in law or equity, the trial court *independently* found infringement as a matter of law and construed the scope of equivalents in fashioning equitable relief. Pet. App. 165a-166a (ruling on JMOL renewal that there was infringement under doctrine of equivalents); *Id.* at 177a (construing scope of claim in fashioning permanent injunction). Therefore, the judgment below would still be affirmed.

MILLER, FEDERAL PRACTICE & PROCEDURE § 2302.2 at 44-45 (1995).

In 1982, Congress acted to create the Court of Appeals for the Federal Circuit as a constitutional Article III court. Pub. L. No. 97-164, 96 Stat. 48. The Federal Circuit is unique among appellate courts in its nationwide and specialized limited jurisdiction, particularly with respect to patent issues. 28 U.S.C. § 1295(a)(1). In creating the Federal Circuit, Congress specifically endowed it with the power to make patent law uniform. "[T]he uniformity in the law that will result from the centralization of patent appeals in a single court will be a significant improvement from the standpoint of the industries and businesses that rely on the patent system." H.R. REP. No. 312, 97th Cong., 1st Sess. 11 (1981); Christianson v. Colt Indus. Operating Corp., 486 U.S. 800, 813 (1988) (Federal Circuit created "to reduce the widespread lack of uniformity and uncertainty of legal doctrine that exist[ed] in the administration of patent law."). Congress thus gave the Federal Circuit through the above-described legislation the power to affirm or create rights for particular patent issues, consistent with overall congressional intent in the patent arena and the powers entrusted to Congress under Article I, § 8, cl. 8. Cf. Graham v. John Deere, 383 U.S. 1, 5-6 (1965).

As reflected in the record of this case, there has been a dispute among members of the Federal Circuit and the patent bar whether application of the doctrine of equivalents should be revised. Insofar as that dispute reflected a lack of uniformity in the patent law (which Respondent does not concede), there existed a need for the Federal Circuit to speak as one voice to fulfill its congressional charge to make the patent law uniform as it involved the doctrine of equivalents.

Fulfilling its mandate, the Federal Circuit has now acted en banc, unifying the law as to the scope and application of the doctrine of equivalents and affirming the right to jury trial on that issue. Because of the congressional mandate and its special expertise in patents, Federal Circuit decisions are entitled to special deference. United States v. Fausto, 484 U.S. 439, 464 (1988) ("Because of the unique character of the Federal Circuit, its conclusions are entitled to special deference by this Court . . . Because its jurisdiction is confined to a defined range of subjects, the Federal Circuit brings to the cases before it an unusual expertise that should not lightly be disregarded.") (Stevens, J., dissenting).38 Moreover, the holdings of the Federal Circuit should be set aside only if they are contrary to the authority entrusted to that court by Congress or are inconsistent with the Constitutional patent grant itself. As demonstrated above, the judgment of the court below is consistent with the 1952 Patent Act and subsequent legislation. Further, continuation of the right to jury trial in cases where the doctrine of equivalents is at issue does not exceed the authority granted the Federal Circuit. "Within the limits of the constitutional grant, the Congress may, of course, implement the stated purpose of the Framers by selecting the policy which in its judgment best effectuates the constitutional aim. " Graham, 383 U.S. at 6. Moreover, "[i]t is the duty of . . . the courts in the administration of the patent system to give effect to the constitutional standard by appropriate application, in each case, of the statutory scheme

The special patent expertise of the Federal Circuit incorporates that of its predecessors, the Court of Customs and Patent Appeals and the Court of Claims. South Corp. v. United States, 690 F.2d 1368, 1370 (Fed. Cir. 1982) (en banc).

of the Congress." Id. Here, Congress has empowered the Federal Circuit to implement the statutory scheme of uniform patent law, and that court has faithfully followed that charge in addressing the doctrine of equivalents in the decision at issue. The court below has broadened no rights, but has simply restated settled law. That decision should not be disturbed.

#### CONCLUSION

For the foregoing reasons, the *en banc* judgment of the Court of Appeals for the Federal Circuit should be affirmed.

Respectfully Submitted,

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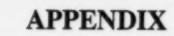
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The U.S. Constitution, article I, § 8, cl. 8 provides:

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The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries . . .

The Patent Act of July 13, 1832, 4 Stat. 577, provides in pertinent part:

[§ 3] And be it further enacted, That wherever any patent which as been heretofore, or shall be hereafter, granted to any inventor in pursuance of the act of Congress entitled "An act to promote the progress of useful arts, and to repeal the act heretofore made for that purpose," passed on the twenty-first day of February, in the year of our Lord, one thousand seven hundred and ninety-three, or of any of the acts supplementary thereto, shall be invalid or inoperative, by reason that any of the terms or conditions prescribed in the third section of the said first-mentioned act, have not, by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, been complied with on the part of the said inventor, it shall be lawful for the Secretary of State, upon the surrender to him of such patent, to cause a new patent to be granted to the said inventor for the same invention of the residue of the period then unexpired, for which the original patent was granted, upon his compliance with the terms and conditions prescribed

in the said third section of the said act. And, in case of his death, or any assignment by him made of the same patent, the like right shall vest in his executors and administrators, assignee, or assignees: Provided however, That such new patent so granted shall, in all respects, be liable to the same matters of objection and defence as any original patent granted under the said firstmentioned act. But no public use or privilege of the invention so patented, derived from or after the grant of the original patent, either under any special license of the inventor, or without the consent of the patentee that there shall be a free public use thereof, shall, in any manner, prejudice his right of recovery for any use or violation of his invention after the grant of such new patent as aforesaid.

The Patent Act of 1836, 5 Stat. 117, provides in pertinent part:

[§ 6] And be it further enacted, That any person or persons, having discovered or invented any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvement of any art, machine, manufacture, or composition of matter, not known or used by others before his or their discovery or invention thereof, and not, at the time of his application for a patent, in public use or on sale, with his consent or allowance, as the inventor or discoverer; and shall desire to obtain an exclusive property therein, may make application, in writing, to the Commissioner

of Patents, expressing such desire, and the Commissioner, on due proceedings had, may grant a patent therefor. But before any inventor shall receive a patent for any such new invention or discovery, he shall deliver a written description of his invention or discovery, and the manner and process of making, constructing, using, and compounding the same in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use the same; and in case of any machine, he shall fully explain the principle, and the several modes in which he has contemplated the application of that principle or character by which it may be distinguished from other inventions; and shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery. He shall, furthermore, accompany the whole with a drawing or drawings, and written references, where the nature of the case admits of drawings, or with specimens of ingredients, and of composition of matter, sufficient in quantity for the purpose of experiment, where the invention or discovery is of a composition of matter; which descriptions and drawings, signed by the inventor and attested by two witnesses, shall be filed in the Patent Office: and he shall moreover furnish a model of his invention, in all cases which admit of a representation by a model, of a convenient size to exhibit advantageously its several parts. The

applicant shall also make oath or affirmation that he does verily believe that he is the original and first inventor or discoverer of the art, machine, composition, or improvement, for which he solicits a patent, and that he does not know or believe that the same was ever before known or used; and also of what country he is a citizen; which oath or affirmation may be made before any person authorized by law to administer oaths.

\* \* \* \*

[§ 13] And be it further enacted, that whenever any patent which has heretofore been granted, or which shall hereafter be granted, shall be inoperative, or invalid, by reason of a defective or insufficient description or specification or by reason of the patentee claiming in his specification as his own invention more than he had or shall have a right to claim as new; if the error has or shall have arisen by inadvertency, accident, or mistake, and without any fraudulent or deceptive intention, it shall be lawful for the Commissioner, upon the surrender to him of such patent, and the payment of the further duty of fifteen dollars, to cause a new patent to be issued to the said inventor, for the same invention, for the residue of the period then unexpired for which the original patent was granted, in accordance with the patentee's corrected description and specification. And in case of his death, or any assignment by him made of the original patent, a similar right shall vest in his

executors, administrators, or assignees. And the patent, so re-issued, together with the corrected description and specification, shall have the same effect and operation in law, on the trial of all actions hereafter commenced for causes subsequently accruing as though the same had been originally filed in such corrected form before the issuing out of the original patent. And whenever the original patentee shall be desirous of adding the description and specification of any new improvement of the original invention or discovery which shall have been invented or discovered by him subsequent to the date of his patent, he may, like proceeding being had in all respects as in the case of original applications, and on the payment of fifteen dollars as hereinbefore provided, have the same annexed to the original description and specification; and the Commissioner shall certify, on the margin of such annexed description and specification, the time of its being annexed and recorded; and the same shall thereafter have the same effect in law, to all intents and purposes, as through it had been embraced in the original description and specification.

The Consolidated Patent Act of 1870, 16 Stat. 198, provides in pertinent part:

[§ 26] And be it further enacted, That before any inventor or discoverer shall receive a patent for his invention or discovery, he shall make application therefor, in writing, to the commissioner, and shall

file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make construct, compound, and use the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery; and said specification and claim shall be signed by the inventor and attested by two witnesses.

The Patent Act of May 24, 1928, 45 Stat. 732 provides in pertinent part:

### [§ 64] Reissue of defective patents

Whenever any patent is wholly or partly inoperative or invalid, by reason of a defective or insufficient specification, or by reason of the patentee claiming as his own invention or discovery more than he had a right to claim as new, if the error has arisen by inadvertence, accident, or mistake, and without any fraudulent or deceptive intention, the commissioner shall, on the surrender of such patent and the payment of the duty required by law, cause a patent for the same invention, and

in accordance with the corrected specification, to be reissued to the patentee or to his assigns or legal representatives, for the unexpired part of the term of the original patent. Such surrender shall take effect upon the issue of the reissued patent, but in so far as the claims of the original and reissued patents are identical, such surrender shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent to the extent that its claims are identical with the original patent shall constitute a continuation thereof and have effect continuously from the date of the original patent. The commissioner may, in his discretion, cause several patents to be issued for distinct and separate parts of the thing patented. upon demand of the applicant, and upon payment of the required fee for a reissue for each of such reissued letters patent. The specifications and claims in every such case shall be subject to revision and restriction in the same manner as original applications are. Every patent so reissued together with the corrected specifications, shall have the same effect and operation in law, on the trial of all actions for causes thereafter arising, as if the same had been originally filed in such corrected form; but no new matter shall be introduced into the specification, nor in case of a machine patent shall the model or drawings be amended, except each by the other; but when there is neither model nor drawing, amendments may be made upon proof satisfactory to the commissioner that such new matter or amendment was a part of the original

invention, and was omitted from the specification by inadvertence, accident, or mistake, as aforesaid.

The Patent Act of December 12, 1980, 94 Stat. 3015, provides in pertinent part:

### [§ 302] Request for Reexamination

Any person at any time may file a request for reexamination by the Office of any claim of a patent on the basis of any prior art cited under the provisions of section 301 of this title. The request must be in writing and must be accompanied by payment of a reexamination fee established by the Commissioner of Patents pursuant to the provisions of section 41 of this title. The request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested. Unless the requesting person is the owner of the patent, the Commissioner promptly will send a copy of the request to the owner of record of the patent.

### [§ 303] Determination of Issue by Commissioner

"(a) Within three months following the filing of a request for reexamination under the provisions of section 302 of this title, the Commissioner will determine whether a substantial new question of patentability affecting any claim of the patent concerned is raised by the request, with or without consideration of other patents or printed publications. On his own initiative, and any time, the Commissioner may determine whether a substantial new question of patentability is raised by patents and publications discovered by him or cited under the provisions of section 301 of this title.

- "(b) A record of the Commissioner's determination under subsection (a) of this section will be placed in the official file of the patent, and a copy promptly will be given or mailed to the owner of record of the patent and to the person requesting reexamination, if any.
- "(c) A determination by the Commissioner pursuant to subsection (a) of this section that no substantial new question of patentability has been raised will be final and nonappealable. Upon such a determination, the Commissioner may refund a portion of the reexamination fee requested under section 302 of this title.

### [§ 304] Reexamination order by Commissioner

If, in a determination made under the provisions of subsection 303(a) of this title, the Commissioner finds that a substantial new question of patentability affecting any claim of a patent is raised, the determination will include an order for reexamination of the patent for resolution of the question. The patent owner will be given a reasonable period, not less than two months from

the date a copy of the determination is given or mailed to har, within which he may file a statement on such question, including any amendment to his patent and new claim or claims he may wish to propose, for reconsideration in the reexamination. If the patent owner files such a statement, he promptly will serve a copy of it on the person who has requested reexamination under the provision of section 302 of this title. Within a period of two months from the date of service, that person may file and have considered in the reexamination a reply to any statement filed by the patent owner. That person promptly will serve on the patent owner a copy of any reply filed.

### [§ 305] Conduct of reexamination proceedings

After the times for filing the statement and reply provided for by section 304 of this title have expired, reexamination will be conducted according to the procedures established for initial examination under the provision of sections 132 and 133 of this title. In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to this patent and a new claim or claims thereto, in order to distinguish the invention as claimed from the prior art cited under the provisions of section 301 of this title, or in response to a decision adverse to the patentability of a claim of a patent. No proposed amended or new claim enlarging the scope of a claim of the patent

will be permitted in a reexamination proceeding under this chapter. All reexamination proceedings under this section, including any appeal to the Board of Appeals, will be conducted with special dispatch within the Office.

### [§ 306] Appeal

The patent owner involved in a reexamination proceeding under the chapter may appeal under the provisions of section 134 of this title, and may seek court review under the provisions of sections 141 to 145 of this title, with respect to any decision adverse to the patentability of any original or proposed amended or new claim of the patent.

## [§ 307] Cancellation Certificate of patentability, unpatentability, and claim cancellation

- (a) In a reexamination proceeding under this chapter, when the time for appeal has expired or any appeal proceeding has terminated, the Commissioner will issue and publish a certificate canceling any claim of the patent finally determined to be unpatentable confirming any claim of the patent determined to be patentable, and incorporating in the patent any proposed amended or new claim determined to be patentable.
- (b) Any proposed amended or new claim determined to be patentable and incorporated into a

patent following a reexamination proceeding will have the same effect as that specified in section 252 of this title for reissued patents on the right of any person who made, purchased, or used anything patented by such proposed amended or new claim, or who made substantial preparation for the same, prior to issuance of a certificate under the provisions of subsection (a) of this section.

The Federal Courts Improvement Act of 1982, § 127, Pub. L. No. 97-164, 96 Stat. 37, provides in pertinent part:

Jurisdiction of the United States Court of Appeals for the Federal Circuit.

- (a) The United States Court of Appeals for the Federal Circuit shall have exclusive jurisdiction.
- district court of the United States, the United States District Court for the District of the Canal Zone, the District Court of Guam, the District Court of the Virgin Islands, or the District Court for the Northern Mariana Islands, if the jurisdiction of that court was base, in whole or in part, on section 1338 of this title except that a case involving a claim arising under any Act of Congress relating to copyrights or trademarks and no other claims under section 1338(a) shall be governed by sections 1291, 1292, and 1294 of this title;
- (2) of an appeal from a final decision of a district court of the United States, the United States District Court for the District of the Canal Zone,

the District Court of Guam, the District Court of the Virgin Islands, or the District Court for the Northern Mariana Islands, if the jurisdiction of that court was based, in whole or in part, on section 1346 of this title, except that jurisdiction of an appeal in a case brought in a district court under section 1346(a)(1), 1346(b), 1346(e), or 1346(f) of this title or under section 1346(a)(2) when the claim is founded upon an Act of Congress or a regulation of an executive department providing for internal revenue shall be governed by sections 1291, 1292, and 1294 of this title;

- (3) of an appeal from a decision of the United States Claims Court;
  - (4) of an appeal from a decision of
- (A) the Board of Appeals or the Board of Patent Interferences of the patent and Trademark Office with respect to patent applications and interferences, at the instance of an applicant for a patent or any party to a patent interference, and any such appeal shall waive the right of such applicant or party to proceed under section 145 or 146 of title 35;
- (B) the Commissioner of Patents and Trademarks or the Trademark Trial and Appeal Board with respect to applications for registration of marks and other proceedings as provided in section 21 of the Trademark Act of 1946 (15 U.S.C. 1071); or
- (C) a district court to which a case was directed pursuant to section 145 or 146 of title 35;
- (5) of an appeal from a final decision of the United States Court of International Trade;

- (6) to review the final determinations of the United States International Trade Commission relating to unfair practices in import trade, made under section 337 of the Tariff Act of 1930 (19 U.S.C. 1337);
- (7) to review the final determinations of the United States International Trade Commission relating to unfair practices in import trade, made under section 337 of the Tariff Act of 1930 (19 U.S.C. 1337);
- (8) of an appeal under section 71 of the Plant Variety Protection Act (7 U.S.C. 2461);
- (9) of an appeal from a final order or final decision of the merit Systems Protection Board, pursuant to sections 7703(b)(1) and 7703(d) of title 5; and
- (10) of an appeal from a final decision of an agency board of contract appeals pursuant to section 8(g)(1) of the Contract Disputes Act of 1978 (41 U.S.C. 607(g)(1)).

### 35 U.S.C. § 103(a), entitled "Conditions for patentability; nonobvious subject matter," provides in pertinent part:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that are subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negatived by the manner in which the invention was made.

### 35 U.S.C. § 112 ¶ 1, entitled "Specification," provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

35 U.S.C. § 271(a), entitled "Infringement of patent," was amended by Pub. L. No. 103-465 § 533 on December 8, 1994 (effective date January 1, 1996) and provides:

Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.



No. 95-728

Supreme Court, U.S.
F I L E D

JUN 13 1996

### Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### REPLY BRIEF FOR PETITIONER

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### TABLE OF CONTENTS

		Pag
TABI	LE OF AUTHORITIES	
1.	Facts	
2.	The Agency-Approved Patentee's Own Description of the Invention as Defining Patent Scope	
3.	Graver	1
4.	Policy	1
5.	Judge or Jury	2
CONC	CLUSION	2

### TABLE OF AUTHORITIES

a	868
	Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd., 927 F.2d 1200 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991)
	Aro Mfg. Co., Inc. v. Convertible Top Replacement Co., Inc., 365 U.S. 336 (1961)
	Asgrow Seed Co. v. Winterboer, 115 S. Ct. 788 (1995)
	Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141 (1989)
	Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574 (2d Cir. 1929), cert. denied, 281 U.S.
	741 (1930)
	Genentech, Inc. v. Wellcome Fdn. Ltd., 29 F.3d 1555 (Fed. Cir. 1994)
	Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950)
	I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429 (1926)
	In re Bell, 991 F.2d 781 (Fed. Cir. 1993)
	In re Deuel, 51 F.3d 1552 (Fed. Cir. 1995)
	Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. (5 Otto) 274 (1877)
	Laitram Corp. v. NEC Corp., 62 F.3d 1388 (Fed. Cir. 1995)
	Markman v. Westview Instruments, Inc., 116 S. Ct. 1384 (1996)
	Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995), aff'd, 116 S. Ct. 1384 (1996)
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	Scripps Clinic & Research Fdn. v. Genentech, Inc., 927 F.2d 1565 (Fed. Cir. 1991)
	Smith v. Magic City Kennel Club, 282 U.S. 784 (1931)
	Sutter v. Robinson, 119 U.S. 530 (1886)
	Transmatic, Inc. v. Gulton Industries, Inc., 53 F.3d 1270 (Fed. Cir. 1995)

TABLE OF	AUTHORITIES—(	Continued
----------	---------------	-----------

	Page
U.S. Industrial Chemicals, Inc. v. Carbide & Carbon Chemicals Corp., 315 U.S. 668 (1942)7, 8	3, 9, 10
Constitution and Statutes	
U.S. Const., Art. I, § 8, cl. 8	9
Biotechnological Process Patents, Pub. L. No. 104-	
41, 109 Stat. 351 (1995)	17
Patent Act of 1952, 35 U.S.C.	
§ 41 (i)	18
§ 102	9
§ 103	9
§ 1121,	14, 16
§ 131	1
§ 154 (b)	19
§ 156	19
§ 156(a)	17
§ 162	17
§ 251	7
§ 271 (a)	1
§ 271 (e)	17
Plant Variety Protection Act, 7 U.S.C. § 2321 et	
8eq	17
Rev. Stat. § 4916	7
Administrative Materials	
37 C.F.R. § 1.821	17
PTO, Manual of Patent Examining Procedure (6th ed. 1995)	
§ 902 et seq	18
§ 2420	17
§ 2421 et seq.	17, 18
PTO, Setting the Course for Our Future (Fiscal	
Year 1995 Review)	18
FTC, Anticipating the 21st Century: Competition	
Policy in the New High-Tech, Global Market- place (May 1996)	15, 16

iv

#### TABLE OF AUTHORITIES—Continued

Other Materials		
	W. Bowman, Patents and Antitrust Law (1973)	19
	D. Chisum, Patents (1995)	
	§ 5.04[6]	17
	§ 7.03[6]	11
	§ 7.03[7]	11
	§ 18.04[1]	6
	§ 18.04[3]	9
	R. Ellis, Patent Claims (1949)	14
	Hantman, Doctrine of Equivalents, 70 J. Pat. &	
	Trademark Off. Soc'y 511 (1988)	13
	Ko, An Economic Analysis of Biotechnology Pat- ent Protection, 102 Yale L.J. 777 (1992)16,	17, 18
	Koykka, Infringement of Patents, 42 F.R.D. 43 (1967)	13
	Merges & Nelson, On the Complex Economics of	
	Patent Scope, 90 Colum. L. Rev. 839 (1990)	15
	Seide & Szanto, Drafting Claims for Biotechnology	
	Inventions, in Fifth Annual Patent Prosecution	
	Workshop: Advanced Claim and Amendment	
	Writing (1995)	17
	Sheiness, Patenting Gene Sequences, 78 J. Pat. &	
	Trademark Off. Soc'y 121 (1996)	18
	Slutsker & Churbuck, Whose Invention Is It Any-	
	way? Forbes (Aug. 19, 1991)	
	Swanson, A Discussion of the Application of the	
	Doctrine of Equivalents in the Graver v. Linde	
	Case, 33 J. Pat. Off. Soc'y 19 (1951)	13

#### REPLY BRIEF FOR PETITIONER

The Patent Act's cause of action for infringement protects against unauthorized use of the patentee's "invention." 35 U.S.C. § 271(a). The question in this case is how the scope of the "invention" is to be determined. Our position is that the invention protected by the federal patent monopoly cannot go beyond what the patentee has told the PTO (and hence the public) its invention is. Whether limited to the claim portion of the patent (fairly read in full context), or permitted to point to the whole patent and its documented history for clearly disclosed equivalents of claim elements, the patentee may not in an infringement suit invoke as its invention something not asserted as the invention before the PTO. This view reflects the statute's central principles that it is up to the patentee, in its disclosures made to and approved by the expert agency, to define the invention for which the federal monopoly is granted 1; that the public is entitled to rely on a reading of those disclosures, and not undertake independent scientific experiments, to understand clearly the scope of the monopoly<sup>2</sup>; and that the basic "bargain

<sup>&</sup>lt;sup>1</sup> See, e.g., 35 U.S.C. § 112 (patent applicant must "distinctly claim[]" what he "regards as his invention"); id. § 131 (if "the alleged new invention" meets statutory requirements, the PTO must "issue a patent therefor"); Pet. Br. 14-15. See also Chiron Br. 12 n.5 ("The Act defines 'invention' through section 112, which states that an applicant must claim 'the subject matter which the applicant regards as his invention.'" (emphasis added)).

<sup>&</sup>lt;sup>2</sup> See Pet. Br. 16-23; Markman v. Westview Instruments, Inc., 116 S. Ct. 1384, 1396 (1996): "As we noted in General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938), '[t]he limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public.' Otherwise, a 'zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field,' United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942), and '[t]he public [would] be deprived of rights supposed to belong to it, without being clearly told what it

held out by the federal patent system [is] disclosure in exchange for exclusive use." Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 159 (1989); id. at 149-51. Under this standard, determining the scope of the patent is a matter of reading and interpreting documents to discern what the patentee has asserted and what it has surrendered, a task that, when performed in infringement litigation, is well within the traditional function of judges. See Markman, 116 S. Ct. at 1395.

The Federal Circuit, in fundamental disagreement, held that the scope of the protected "invention" is not determined by interpreting the patentee's own statement of its invention. After such interpretation is exhausted, the inquiry-first undertaken by other inventors and market participants trying to avoid infringement, later undertaken by a finder of fact in adjudicating infringementthen proceeds to an independent assessment of the scientific facts to determine what changes from the patentee's asserted invention would make a "substantial difference." Under this standard, the invention awarded to the patentee is not limited to what the patentee has defined through the statutory PTO processes for issuing (or reissuing) patents, but instead is defined in court through factual determinations, even allowing recapture of coverage the patentee dropped in the PTO to obtain the patent, all based on a reassessment in the infringement action of what the patentee could have claimed. In the present case, the Federal Circuit applied its standard to hold that a patentee who has throughout its patent disclosed a chemical process with clearly stated limits (e.g., a pH of approximately 6.0 or more), and included those limits at the unchallenged insistence of the PTO, nevertheless was entitled to a monopoly on a process that concededly falls outside any fair interpretation of those stated limits, even though the patent nowhere suggests that the repeatedly stated limits were unimportant to the process.

The Federal Circuit's view should be rejected in favor of confining patent scope to what the patentee has said its invention is. The Federal Circuit's view does not follow from this Court's decision in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950), or other precedents. It cannot be reconciled with the statute's fundamental requirement that patentees circumscribe their patent monopolies by the disclosures made to and approved by the PTO, so that other inventors, market competitors, and the public can understand with clarity and without costly independent experimentation where each such monopoly ends. And it would largely undo this Court's recent decision in Markman, where the Court insisted that the job of interpreting claim language be carried out so that "'[t]he limits of a patent [are] known," so that there is no "'zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement," so that the public is "'clearly told what it is that limits'" its rights, 116 S. Ct. at 1396. Those objectives would immediately be defeated by holding that the actual "'limits of a patent'" protected in an infringement action extend beyond the interpretation of the patent's claims to an invention nowhere disclosed by the patentee but defined in litigation under an inherently uncertain "substantial differences" standard.8

is that limits these rights.' Merrill v. Yeomans, 94 U.S. 568, 573 (1877)."

do not understand this Court in Markman to have decided the issue presented in this case (which was already accepted for review, but not yet argued or fully briefed) by its passing quotation from a Federal Judicial Center publication that sketches the outlines of the lower court case law under review here. 116 S. Ct. at 1388 ("'the heart of the invention'"). That reference formed no part of the rationale of Markman, which in fact strongly points the other way in its reaffirmation of the patent statute's condemnation of uncertainty about patent scope. Moreover, as Hilton Davis recognizes (Resp. Br. 24 n.24), this Court has broadly rejected the "heart of the invention" notion, specifically in the context of "combination" claims like the example cited by this Court (116 S. Ct. at 1388 n.1): "there is no legally recognizable or protected 'essential' element, 'gist' or 'heart' of the invention in a combination

1. Facts. Notwithstanding Hilton Davis's several attempts to relitigate the facts and to walk away from its earlier correct concession of no literal infringement (Resp. Br. 2-5 & n.4, 31 n.30), the facts of the case as it comes to this Court-found by the jury, amply supported by the evidence, and accepted by the courts below-are not properly in dispute. "Warner-Jenkinson's process operated at . . . a pH of 5." Pet. App. 4a. Hilton Davis's patent claims expressly require a pH of at least "approximately 6.0." J.A. 36-37. Hilton Davis conceded below that the meaning of its claim words does not encompass Warner-Jenkinson's process: e.g., the pH levels differ by a factor of 10, with the different acidity levels made possible by different chemical compositions of the dye solutions being filtered. The jury was not even presented with an issue of literal infringement. See Pet. Br. 4-5.

Hilton Davis added the pH limit to the originally submitted patent claims by amendment, at the specific behest of the PTO, so as to secure issuance of the patent. See Pet. Br. 3-4. And no lower pH level is asserted to be within the invention anywhere else in the lengthy description of the invention in the patent, which contains numerous references to pH levels, all at least 6. See Pet. Br. 5 n.6. Moreover, Hilton Davis's patentee gave testimony showing that this limit was no accident: when the claimed filtering process was applied to industrial-size volumes of the dye solution, lower pH levels would cause

"tremendous foaming problems in the plant." J.A. 111. In short, the "invention" awarded to Hilton Davis in this suit—with infringement found without questioning Warner-Jenkinson's independent development of its process—was concededly one not asserted as the invention anywhere in the patent, and, indeed, one deliberately dropped during the application process in order to obtain the patent.<sup>6</sup>

- 2. The Agency-Approved Patentee's Own Description of the Invention as Defining Patent Scope. In our opening brief, we argued that the "invention" protected against infringement should reach no farther than what the patentee asserted as its invention through the prescribed PTO-approval processes, i.e., no farther than the fair meaning of the patent claims plus substantive equivalents disclosed as such in the remainder of the patent (and its documented history). See Pet. Br. 38-41; see also Pet. Br. 34-37 (surrender as part of disclosure standard). We also argued that, if the Court were to reach the question whether patent scope should ever extend beyond the fair meaning of the patent claims (which it need not). the Patent Act would be best construed to preclude such an extension. Pet. Br. 41-49. In either event, we argued, the Federal Circuit's standard was deeply incompatible with the statutorily prescribed role of precise "claiming" of the boundary of the protected invention through prescribed agency processes. Pet. Br. 13-31.
- a. Hilton Davis seeks to deny this basic incompatibility. Resp. Br. 18-19. But its denial is devoid of any explanation, relying instead only on its overreading of Graver. Ibid. The inconsistency, moreover, has been widely and repeatedly recognized precisely to the extent that, as Hilton Davis must positively insist, the Federal Circuit's doctrine of equivalents extends patent scope

patent." Aro Mfg. Co., Inc. v. Convertible Top Replacement Co., Inc., 365 U.S. 336, 345 (1961). In any event, Markman says nothing about the sources for determining the scope of the invention: what the patentee has disclosed and what it has surrendered; or independent factual inquiry.

<sup>&</sup>lt;sup>4</sup> Hilton Davis relies for a contrary assertion entirely on the testimony of a witness who said that, on a visit to Warner-Jenkinson's plant, he saw four filtering machines, one of which was not in operation, and one of the machines had a pH reading of 6. See Resp. Br. 4-5 n.4, ultimately relying on J.A. 121. The same witness, however, when asked if it was the machine that was shut down for cleaning (filled with cleaning solution rather than dye) that had a pH of 6, acknowledged: "Could have been." J.A. 122.

<sup>&</sup>lt;sup>5</sup> The jury rejected Hilton Davis's charge of willful infringement (J.A. 69), and the court of appeals accepted "Warner-Jenkinson's lack of intent" and "evidence of independent development" (Pet. App. 20a).

7

beyond where the claim's meaning leaves off. Resp. Br. 42-43.6

As a correct caution against crabbed construction of patentees' language, there is no such incompatibility. See 4 D. Chisum, *Patents* § 18.04[1][a][i], at 18-74 (1995) ("Viewed as an aid to claim construction, as a prescription against sterile literalism in construction and application of claim language, the doctrine of equivalents is fully consistent with the notion that the claim measures the scope of the patent monopoly."), quoted in part at Litton Br. 11. But once the doctrine is not "so limited," once the meaning of words is left behind for expansion of patent scope beyond those meanings, it is well recognized that "a tension exists between the doctrine and the fundamental notion that the claim measures the scope of the patent monopoly" (id. at 18-78). See also id. § 18.04. at 18-73 (doctrine is "contrary to the general principle that the claims measure the scope of the patent monopoly"); Pet. Br. 20-21, 43-45 (quoting numerous sources); Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574, 575 (2d Cir. 1929), cert. denied, 281 U.S. 741 (1930) (doctrine "anomalous" for this reason). And a similar tension obviously exists between a standard requiring independent experimentation and factual inquiry in court to determine the scope of the protected "invention" and the basic decision of the federal patent law. made toward the end of the Ninteenth Century, to shift onto the Patent Office and the patentee, and away from the courts and the public, the duty to define the protected

invention. Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. (5 Otto) 274, 278-79 (1877); see Pet. Br. 17.

b. Contrary to Hilton Davis's unelaborated assertion (Resp. Br. 21; see also U.S. Br. 27), the Federal Circuit's decision effectively circumvents the careful limits set by Congress in granting the PTO authority to reissue a patent with broadened claim language—authority restricted to making the new claim language reflect "the invention disclosed in the original patent" (35 U.S.C. § 251). This Court recognized in Keystone that expansion of patent scope beyond claim language was in reality a substitute for the reissue process. 95 U.S. at 278 ("If the patentees have not claimed the whole of their invention, and the omission has been the result of inadvertence, they should have sought to correct the error by a surrender of their patent and an application for a reissue."). Moreover, this Court's leading modern precedent on reissue confirms that the "invention" is limited to what the original patent asserted and is not to be determined by a later independent inquiry into whether scientific facts make the original disclosure unduly narrow.

In U.S. Industrial Chemicals, Inc. v. Carbide & Carbon Chemicals Corp., 315 U.S. 668 (1942) (cited at Resp. Br. 45), this Court held that a reissued patent was invalid because it was not "for the same invention" (Rev. Stat. § 4916, predecessor of 35 U.S.C. § 251) as the original patent. The original patent claims and specification described a process in which the introduction of water was required, whereas the reissued claims treated the introduction of water as noncritical. 315 U.S. at 671-75. The Court held that the claims were not "for the same invention," based on its "comparison of the disclosures of the two instruments." 315 U.S. at 675, 671 (emphasis added). The Court explained that it was not enough that, as a matter of scientific fact, the change made no difference in substance: the "invention" was limited to what the initial patent clearly disclosed. *Id.* at 676-80.

The Court explained that the invention of the original patent was only what was "intended or sought to be

<sup>&</sup>lt;sup>6</sup> Here, it was correctly conceded by Hilton Davis, and accepted below, that a pH of "approximately 6.0" cannot, as a matter of English-language and scientific meaning, encompass a pH of 5 (which is ten times as acidic). The en banc Federal Circuit, having reaffirmed in the Markman case that claims are to be given a fair construction in their full documentary context and held that this task was one for judges (Markman v. Westview Instruments, Inc., 52 F.3d 967, 979-81 (1995), aff'd, 116 S. Ct. 1384 (1996)), held in this case that the determination of equivalents is—precisely because it involves going beyond the meaning of the words of claims—a quite different task, requiring a factual determination by juries.

covered or secured by the original patent" and that "[t]he required intention does not appear if the additional matter covered by the claims of the reissue is not disclosed in the original patent." *Id.* at 676 (footnotes omitted). That the patentee knew more than it said was irrelevant:

If there be failure of disclosure in the original patent of matter claimed in the reissue, it will not aid the patentee that the new matter covered by the reissue was within his knowledge when he applied for his original patent. And it is not enough that an invention might have been claimed in the original patent because it was suggested or indicated in the specification. It must appear from the face of the instrument that what is covered by the reissue was intended to have been covered and secured by the original.

Ibid. (footnotes omitted). Nor was it relevant that both lower courts, based on expert testimony, had found that the change in the process (omission of water) was "immaterial" (id. at 677), "not essential to the technological success of the process" (id. at 679), and that the patentee knew this "when he applied for his original patent." Id. at 677. "The inquiry at once arises, if this were so, why did he not say so." Ibid. The disclosure, rather than incourt scientific evidence, determines the "invention" protected by the patent: "It is inadmissible to enlarge the scope of the original patent by recourse to expert testimony to the effect that a process described and claimed in the reissue, different from that described and claimed in the original patent, is, because equally efficacious, in substance that claimed originally." Id. at 678 (footnote omitted).

The Federal Circuit's holding that the protected invention is to be scientifically defined in court cannot comfortably co-exist with U.S. Industrial Chemicals. That decision established—before the 1952 Act—that the "invention" protected by a patent claim is limited to what the patent on its face discloses as the invention, and the scientific immateriality of an element asserted to be part of the invention throughout the specification, even if that immateriality was known to the patentee, does not change

the protected invention to more than what was clearly disclosed. If courts are to look beyond the meaning of the patent claims, U.S. Industrial Chemicals makes clear that they may look no further than the full patent for what the patentee said its invention was.

c. Not surprisingly, Hilton Davis's efforts to point to supposedly contrary precedent fail. See Resp. Br. 30 n.29; see also Litton Br. 13. None of the cited precedents repudiates the central importance of disclosure, as recognized in U.S. Industrial Chemicals. Nor do any of the cited decisions contradict the necessarily implied requirement—which this Court has repeatedly stated—that any newly asserted equivalent must have been known to be so when the patent issued. See 4 D. Chisum, Patents § 18.04[3], at 18-17 to 18-125 (surveying Court's precedents stating this requirement; contrary rulings by the Federal Circuit, not this Court); Pet. App. 126-130a.

Limiting non-literal infringement to what is disclosed by the patentee serves fundamental patent policies. The core principle that patentees gain protection only for "their . . . Discoveries" (U.S. Const., Art. I, § 8, cl. 8) for what they figured out that was "novel" and "nonobvious" (35 U.S.C. §§ 102, 103)—makes it difficult to encompass within the protected "invention" anything except what the patentee knew was equivalent to its claim. And the basic statutory bargain of "disclosure in exchange for exclusive use" (Bonito Boats, 489 U.S. at 159), together with the long-recognized compelling need for clear public notice of the scope of patents (see note 2, supra), justifies limiting the patentee's protected "invention" to what it disclosed as part of the invention, so that other inventors need not conduct independent experiments even to figure out the scope of the patentee's monopoly. Here, without such experiments, no one could have known whether, when industrial volumes of dye were used (cf. Resp. Br. 5 n.5, 34 n.24), the filtering process would function equivalently with a pH of less than approximately 6.0. In the absence of the rules that, in

Graver, restricted patentees' ability to write sufficiently protective claims (see Pet. Br. 33 n.26), patentees today are broadly able to make clear disclosures of their inventions. In these circumstances, if a patentee later asserts that the invention "really" encompasses more than was stated, "[t]he inquiry at once arises, if this were so, why did he not say so." U.S. Industrial Chemicals, 315 U.S. at 677.

d. One aspect of the principle that the patentee's protection is limited to what it asserted as its invention before the PTO is the long-recognized principle that a patentee may not recapture through the doctrine of equivalents what it provably dropped from its asserted coverage by narrowing amendments made at the insistence of the PTO, because such amendments constitute a surrender of coverage that makes clear what was not part of the asserted (and approved) invention. See Pet. Br. 34-37. The Federal Circuit rejected this limit, holding instead that a court in an infringement suit must independently reevaluate the reason for the documented surrender to decide whether the patentee actually could have secured approval for the patent without the dropping of coverage-even though the patentee did not pursue appeals from any rejections of coverage it believed erroneous. Hilton Davis briefly defends that ruling, but its defense plainly fails. Resp. Br. 33-34.

Hilton Davis relies entirely on two decisions of this Court as support for the Federal Circuit's rule (Resp. Br. 33, citing Sutter v. Robinson, 119 U.S. 530, 541 (1886), and Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136-37 (1942)), but neither of the two decisions, nor any other decision of which we are aware, anywhere says that a documented dropping of coverage at the behest of the PTO is to be subjected to a judicial reevaluation in an infringement suit, so that such surrenders may be reversed if they were not after all legally required. This Court has in fact rejected such a judicial reexamination, stating that a patentee who is "dissatisfied with the rejection [of a broader claim by the PTO] . . .

should pursue his remedy by appeal; and where, in order to get his patent, he accepts one with a narrower claim, he is bound by it. Whether the examiner was right or wrong in rejecting the original claim, the court is not to inquire." I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429, 443 (1926) (citations omitted); Smith v. Magic City Kennel Club, 282 U.S. 784, 789-90 (1931). Core patent policies powerfully support this simple rule of surrender: the public must be able to rely on the documented record, and the patentee has ample means of self-protection, including rights of administrative and judicial appeal from improper rejections.

3. Graver. Hilton Davis, like the Federal Circuit, relies heavily on the notion that the 1952 Patent Act incorporated a broad doctrine of equivalents based on Graver. Resp. Br. 11-15. But it has no convincing answer to our showing that Graver itself is consistent with the much narrower doctrine, based on a strict disclosure-

<sup>7</sup> The discussion of the issue by the United States, which omits any reference to this Court's precedents (U.S. 20-23), illustrates how uncertain patent boundaries would be if judicial reexamination of the reasons for undisputed, documented surrenders were permitted. The United States states initially that this doctrine of prosecution history estoppel "prevents a patentee from obtaining, through the doctrine of equivalents, protection that he could not have obtained, or that he refrained from obtaining, from the PTO at the time the patent was issued." U.S. Br. 20 (emphasis added). It then suggests, however, that a court in an infringement suit may allow equivalents protection for what a patentee demonstrably "refrained from obtaining" depending on the reason for the dropping of coverage before the PTO. But while the United States indicates that avoidance of prior art counts as a good enough reason to preclude equivalents protection, it is unclear about when an inadequate specification is a good enough reason. U.S. Br. 22-23 ("should not necessarily estop") (emphasis added). The United States does not seem to speak to the problem of inoperativeness of the "equivalent" process as a reason-a very different "enablement" problem from the problem of merely insufficient explanation. See 2 D. Chisum, Patents §§ 7.03[6], [7](c) (1995). The evidence in this case was that pH levels below 6.0 caused "tremendous foaming" problems that, as far as Hilton Davis was aware, made the filtration process unworkable for its industrial purposes.

in-the-patent standard, that we have suggested. Pet. Br. 31-34. For that reason, and because *Graver* must be read in light of the long line of decisions of this Court on the role of claims and what the "invention" is, including those noted above, *Graver* cannot support the conclusion that the 1952 Congress codified a doctrine of equivalents like that adopted by the Federal Circuit.<sup>8</sup>

Unsurprisingly, the other precedents to which Hilton Davis points are equally unsupportive of a broad, generally available doctrine expanding patent scope beyond claim language that is required to give clear public notice. See Resp. Br. 11, 22, 25; Litton Br. 9-10. The earlier decisions come from an era when, as this Court has recognized, the role of claims—and hence their drafting and interpretation—was critically different: they were not understood to define with precision the outer reaches of patent scope. See Markman, 116 S. Ct. at 1390.9 The

more recent decisions, including all those from the 20th Century, rejected infringement findings for the very reasons we have urged, or involved the question whether to restrict potentially broad claim language that often used phrases like "substantially as described" to refer to the narrower description found in the specification. In the latter cases, rather than invalidate the patent claim as insufficiently supported by the specification, this Court, as a matter of construction or otherwise, narrowed the patent's coverage based on the specification. See, e.g., Koykka, Infringement of Patents, 42 F.R.D. 43, 59-63 (1967); Hantman, Doctrine of Equivalents, 70 J. Pat. & Trademark Off. Soc'y 511, 521-40 (1988); id. at 539 (discussing Sanitary Refrigerator specifically and noting breadth of claim language). That approach, whatever its current validity (Pet. Br. 45 n.31), preserves rather than defeats the ability of the public to rely on claim language as the clear outer boundary of forbidden territory and reinforces the central principle that patent scope is limited to the patentee's disclosures in the patent. In short, by the time of Graver, there was no modern precedent of the Court that would have demanded overruling in order for the Court finally to announce, based on the Court's numerous precedents on the monopoly-defining role of patent claims, that patent scope could not be expanded beyond the meaning of the claims. See Pet. Br. 43-45 (quoting articles from period). Graver is the only significant precedent, and it is consistent with our proposed disclosure standard. 10

<sup>\*</sup> Although Graver stated memorably that "[o]utright and forth-right duplication is a dull and very rare type of infringement" (339 U.S. at 607), we do not understand how the statement supports a broader standard of nonliteral infringement: a high rate of violation is usually not viewed as an indication of the success or appropriateness of a legal standard. In any event, today literal infringement cases are not rare—or, as far as we know, rarer than nonliteral infringement cases. Among the most recent cases see, e.g., PPG Industries, Inc. v. Guardian Industries Corp., 75 F.3d 1558 (Fed. Cir. 1996); Laitram Corp. v. NEC Corp., 62 F.3d 1388 (Fed. Cir. 1995); and Transmatic, Inc. v. Gulton Industries, Inc., 53 F.3d 1270 (Fed. Cir. 1995). Appellate judges would seem likely to see a disproportionately small share of cases of "outright and forthright" infringement, which are most likely not to be pursued to that advanced stage of litigation.

The Court in Markman noted the evolving importance of patent "claims" in the Nineteenth Century: "Although, as one historian has observed, as early as 1850 'judges were . . . beginning to express more frequently the idea that in seeking to ascertain the invention "claimed" in a patent the inquiry should be limited to interpreting the summary, or "claim," '[t]he idea that the claim is just as important if not more important than the description and drawings did not develop until the Act of 1870 or thereabouts." 116 S. Ct. at 1390 (citations omitted). That change in role for claims makes

inapposite earlier authorities calling for in-court definition of inventions without restriction to a fair interpretation of the language of claims—language that was, in any event, comparatively uninformative until the latter 1800s. See Pet. Br. 15-16, 43-46.

<sup>&</sup>lt;sup>16</sup> In the absence of any such express repudiation by this Court, there were of course some lower court precedents invoking the doctrine of equivalents to expand claims, but even those decisions were comparatively few in number and—unlike the Federal Circuit decision here—treated the doctrine as exceptional, not routinely available to go beyond claim language. See Swanson, A Discussion

Even if this Court were to consider whether patent scope should ever exceed the fair meaning of valid patent claims, as Graver held permissible, Graver is not sufficient to compel an affirmative answer. The statute enacted by the 1952 Congress textually and structurally implies a commitment to agency-approved claims as the outer limits of the protected invention; pertinent legislative history reflects no endorsement of Graver but suggests a deliberately narrow use of "equivalents," in a context of interpreting certain "functional" claim language (35 U.S.C. § 112 (paragraph 6)); and Graver was well understood to be anomalous in light of a long line of this Court's decisions on claims as the limit of protection. See Pet. Br. 13-31, 42-45. But even if the 1952 Act is not read as repudiating Graver's recognition of patentscope expansion beyond claim language, it certainly cannot be understood as codifying such a doctrine: at most, it left this judicially created doctrine in the hands of this Court for continued consideration of its coherence in the overall patent regime. Nothing about what Congress did in 1952, or since, deprives this Court of the freedom to abandon the doctrine if it turns out, as the Federal Circuit has now held, that the doctrine cannot be narrowly cabined so as to preserve the basic role of agencyapproved disclosures in furnishing clear public notice of the scope of patent monopolies.<sup>11</sup>

4. Policy. The basic policy issue in this case is whether it is possible to institutionalize the sort of flexi-

bility as to patent scope adopted by the Federal Circuit to deal with individual instances of inadequate claim drafting-a "substantial differences" standard applied in litigation—without systemic undermining of the statutory recognition of the public's need for clear notice of patent boundaries, supplied through agency-approved, patenteedrafted disclosures. Hilton Davis has not remotely shown how to accomplish such a feat, much less how to do so consistent with the intrinsic need to ensure that patent protection does not stifle innovation.12 Any such showing is all the less likely under the disclosure standard we have set forth, which looks beyond the language of claims themselves to see whether the patentee has clearly asserted equivalents of the claimed invention in the more expansive and less constraining sections of the patent. Ultimately, the systemic statutory commitment to known patent boundaries simply cannot survive any standard that would allow a pH of 5 to be found part of a patent that was deliberately limited throughout to pH levels of approximately 6.0 or more (for reasons that could not be determined without independent experimentation).

of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y, 19, 31 (1951); R. Ellis, Patent Claims 11-12, 41-42, 59-60 (1949).

Our opening brief noted some of the post-1952 enactments by Congress that reaffirm the need for clear public notice of what territory is covered by valid patents. Pet. Br. 23-24. Hilton Davis cites some post-1952 amendments to the Patent Act, including the addition of "offers to sell" to the infringement provision (Resp. Br. 15), but there is no suggestion—and we know of no evidence—that Congress ever considered what the protected "invention" is when enacting any such provisions.

<sup>12</sup> The recently issued FTC Report, summarizing considerable literature and extensive public hearings, reiterated that overbroad patent scope can be the enemy of both competition and innovation and that there is no reasonable consensus on how much protection is too much, which may, in fact, vary from field to field. FTC, Anticipating the 21st Century: Competition Policy in the New High-Tech, Global Marketplace ch. 6, ch. 8 at 12-17 (May 1996). "We often talk about how important patents are to promote innovation, because without patents, people don't appropriate the returns to their innovation activity . . . . On the other hand, some people jump from that to the conclusion that the broader the patent rights are, the better it is for innovation, and that isn't always correct, because we have an innovation system in which one innovation builds on another. If you get monopoly rights down at the bottom, you may stifle competition that uses those patents later on, and so . . . the breadth and utilization of patent rights can be used not only to stifle competition, but also have adverse effects in the long run on innovation. We have to strike a balance." Id. Ch. 6, at 6 (quoting Joseph Stiglitz, chairman of Council of Economic Advisers). See also Merges & Nelson, On the Complex Economics of Patent Scope, 90 Colum. L. Rev. 839 (1990).

Two amicus briefs defend the Federal Circuit's standard of nonliteral infringement by arguing that the standard is needed to ensure "proper" protection for biotechnology inventions. Chiron Br. 14-18; Biotech. Ind. Org. Br. 7-10. But it is hardly possible in this case to decide whether the asserted problem is even a legitimate problem, i.e., whether biotechnology patents are narrower than they should be (so as to reward true invention that would not otherwise have been forthcoming, without stifling subsequent improvements that may be just as important); and whether biotechnology inventors who can describe their inventions well enough to say what is new and to "enable" others to make them in their full asserted scope (35 U.S.C. § 112 (paragraph 1)) nevertheless are unable to "claim" what they have invented to capture that scope. 18

The examples offered by amici raise obvious questions about whether a genuine problem exists, and suggest the importance of carefully attending to just what the patentee has discovered or invented when analyzing the asserted inadequacies of "claiming" practice. If the patentee's invention is an isolated protein, with the patentee having discovered the amino acid sequence, then the claim may state the amino acid sequence; and it is irrelevant that there is "redundancy" in the genetic code. See BIO Br. 8-9; Chiron Br. 15-16. If what the patentee has done is to identify and isolate a "particular gene," i.e., one special "sequence of DNA that encodes for a particular protein" (Chiron Br. 15), then it is unclear why the patentee's monopoly should extend beyond that sequence. Similarly, it is not clear why a patent claim for one protein should be protected against a different protein-"later discovered" by someone else-simply because, unbeknownst to the patentee, it had "functionally identical biological properties" (Chiron Br. 18). See Ko, What is possible to decide here is that, if the problems in this particular field are real, their solution lies elsewhere—other than in a generally applicable, broad doctrine of equivalents that undermines the need for clear notice of patent scope in all fields.

If distinctive statutory rules for biotechnology inventions are needed. Congress has shown itself more than able to write them, having repeatedly written special rules for plants (35 U.S.C. § 162 (softening Section 112 disclosure requirement); see also Plant Variety Protection Act, 7 U.S.C. § 2321 et seq.; Asgrow Seed Co. v. Winterboer, 115 S. Ct. 788 (1995)) as well as for modern biotechnology inventions (e.g., 35 U.S.C. §§ 156(a)(5)(B) and 271(e); Biotechnological Process Patents, Pub. L. No. 104-41, 109 Stat. 351 (Nov. 1, 1995)). In any event, the scope of patentable inventions, the proper means of drafting patent claims, and other potentially distinctive problems in biotechnology are the subjects of continuing and active administrative and judicial attention; and flexibility of claiming in this area is anything but foreclosed. See, e.g., 37 C.F.R. § 1.821 et seg.; PTO, Manual of Patent Examining Procedure (MPEP) § 2420 et seq. (6th ed. 1995); Seide & Szanto, Drafting Claims for Biotechnology Inventions, in Fifth Annual Patent Prosecution Workshop: Advanced Claim and Amendment Writing 357-492 (1995).14 It is through

protection in biotechnology: some commentators have suggested that overprotection has stifled important improvements. See, e.g., FTC, Anticipating the 21st Century, ch. 6 at 3-4, ch. 8 at 13-14 (FTC Staff Report, May 1966); Slutsker & Churbuck, Whose Invention Is It Anyway?, Forbes, Aug. 19, 1991, at 114 ("Overly broad patents discourage innovation by making it hard for inventors to come along and make an idea even more useful. . . In case after case, latecomers to the protein research lose their court challenges and walk away from their research."); Ko, An Economic Analysis of Biotechnology Patent Protection, 102 Yale L.J. 777, 779, 790 n.98 (1992) (research dropped and deterred).

supra, at 785 ("[A] single amino acid change at a critical locus can dramatically alter the shape of the protein, nullifying the protein's original function or creating an entirely new function. Because this relationship between structure and function remains unpredictable, creating an improved second generation protein may be as daunting a task as producing the first generation recombinant protein."); 2 D. Chisum, Patents § 5.04[6], at 5-429, 5-430 & n.5.1 (1955) ("Because of the unpredictable nature of chemical reactions, a newly-synthesized compound may be very similar in structure to known and existing compounds and yet exhibit very different properties."; "Similar problems concerning the impact of unpredictability are encountered in the field of biotechnology.").

<sup>&</sup>lt;sup>14</sup> An extensive review of biotechnology patent claims is contained in Seide & Szanto, supra, at 438-56. See also Scripps Clinic

continuation of that focused process-rather than an across-the-board doctrine of equivalents that may be particularly unsuited to biotechnology (see Ko, supra, at 791)—that issues about further flexibility or breadth in the definition of particular protected inventions should be resolved. The expert agency (and the courts on review) can thereby address the problems of the particular subject, judging with respect to any unique problems of biotechnology and for particular types of inventions (e.g., a protein, an isolated gene sequence, a process) what language will simultaneously capture the patentee's contribution to technology and provide sufficient notice to other researchers of the scope of the territory monopolized by the patentee. Such targeted clarifications, moreover, establish settled and reliable understandings about how particular inventions may be patented. Those subjectspecific, expert-based, and stabilizing means of defining "proper" patent protection in this area make reliance on any special problems in biotechnology insufficient to

& Research Fdn. v. Genentech, Inc., 927 F.2d 1565, 1572 (Fed. Cir. 1991) ("Open-ended claims are not inherently improper. . . . They may be supported if there is an inherent . . . upper limit and the specification enables one of skill in the art to approach that limit."); Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd., 927 F.2d 1200, 1214 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991) (court "do[es] not intend to imply that generic claims to genetic sequences cannot be valid where they are of a scope appropriate to the invention disclosed by an applicant"); In re Deuel, 31 F.3d 1552 (Fed. Cir. 1995); In re Bell, 991 F.2d 781 (Fed. Cir. 1993); Genentech, Inc. v. Wellcome Fdn. Ltd., 29 F.3d 1555 (Fed. Cir. 1994); Sheiness, Patenting Gene Sequences, 78 J. Pat. & Trademark Off. Soc'y, 121, 123, 124 (1996) ("many patents have issued containing broad claims that encompassed variants and alleles").

The PTO has required standardized computerized submissions for biotechnology patents (37 C.F.R. § 1.821; MPEP § 2421 et seq.), for the same reason that it has made significant (statutorily mandated) efforts to ensure ease of access to patents through computerized and other search mechanisms (see 35 U.S.C. § 41(i); MPEP § 902 et seq.; PTO, Setting the Course for Our Future 26-27 (Fiscal Year 1995 Review)): recognition of the need of inventors and businesses to be able to determine with clarity the boundaries of forbidden territory before they expend potentially vast resources in their own efforts to innovate and to compete in the marketplace.

justify a universally available, inherently uncertain standard for in-court definition of all inventions through a broad doctrine of equivalents.<sup>15</sup>

The inescapable addition of substantial systemic uncertainty as to patent boundaries (cf. Chiron Br. 19-20 (noting claim construction not perfectly precise)) is not the only problem with Hilton Davis's policy argument for departing from the meaning of the patent disclosure, which rests ultimately on an appeal to fairness and the basic patent-law policy of providing an adequate reward for the patentee's contribution to knowledge. See Resp. Br. 27, 35. The argument also is one-sided and misstates the patent statute's policy. The patent scheme's fundamental judgment to accept present monopoly returns in exchange for promoting innovations that would not otherwise occur has no direct application in a case of independent (and simultaneous) development. W. Bowman, Patents and Antitrust Law 17 (1973) (if "a patent monopoly were granted for a product which would have been forthcoming anyway, then the restricted output caused by the patent monopoly leads to a net social loss to the community"). And Hilton Davis cannot simultaneously insist on a uniform patent scope and on departures from the patent disclosures based on fairness to patentees "who have failed to express their complete

<sup>15</sup> Amici appear to suggest that requiring care in claiming may overburden the PTO and delay issuance of biotechnology patents. Chiron Br. 8; BIO Br. 9-10. But the alternative is to impose on the marketplace and then the courts the burdens of clarifying the scope of patents issued with less care-patents that, in the meantime, also deter economically beneficial competition and improvements within the zone of uncertainty. As for concern about the application process eating up substantial portions of the new 20year-from-filing term of patents (replacing the former 17-yearsfrom-issuance term), most biotechnology patents seem to be issued only slightly more slowly than other patents, and in under three years, see Sheiness, supra, at 136-37); the term may be extended to account for successful appeals from adverse PTO decisions (35 U.S.C. § 154(b)); and special extensions are prescribed for certain biotechnology inventions (id. § 156). Of course, problems in term length can be addressed again, if necessary, by Congress.

meaning" (Claude Neon Lights, 36 F.2d at 576), for any invocation of fairness requires consideration of the defendant's equities as well: here, substantial investment to arrive independently at the process the plaintiff seeks to monopolize despite its omission from the patent. A uniform, known patent scope demands adherence to the patent's disclosures as the definition of the patent monopoly.

5. Judge or Jury. Hilton Davis's final argument is that juries rather than judges should apply the doctrine of equivalents. Resp. Br. 36-50. This argument, however, is completely dependent on this Court's accepting the generally applicable "substantial differences" standard of the Federal Circuit, which calls for what the patentee invented to be defined by scientific testimony about what was technologically important or unimportant to the invention. A standard that, in contrast, limits the "invention" to what the patentee disclosed is plainly a matter for application by judges, as the interpretation of patent documents is at the core of judges' traditional role and expertise. See Markman, 116 S. Ct. at 1395.

#### CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted,

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## In the Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., PETITIONER

v.

HILTON DAVIS CHEMICAL CO.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

# BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

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#### QUESTION PRESENTED

Whether the equitable doctrine of equivalents in patent infringement litigation should be limited to situations in which the patent holder shows (1) that the differences between the elements of the accused device and the patent claims are insubstantial, and (2) that there are no equitable considerations that would preclude application of the doctrine.

### TABLE OF CONTENTS

	Page
Interest of the United States	1
Statement	
Summary of argument	9
Argument	12
A clearly defined doctrine of equivalents serves	
the goals of the Patent Act	14
A. The doctrine of equivalents applies only where	
each element claimed in the patent, or a sub-	
stitute for each element that differs only	
insubstantially from a claimed element, is	
present in the allegedly infringing device	16
B. The doctrine of equivalents does not apply	
where it would yield inequitable results	20
C. Section 112 ¶ 6 of the Patent Act, permitting	
means-plus-function claiming, did not displace	-
the doctrine of equivalents	23
D. The doctrine of equivalents does not conflict with Sections 251-252, the Patent Act's reissue	
provisions	26
Conclusion	28
TABLE OF AUTHORITIES	
Cases:	
Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336 (1961)	24
Bonito Boats, Inc. v. Thunder Craft Boats, Inc.,	24
489 U.S. 141 (1989)	12
Corning Glass Works v. Sumitomo Elec. U.S.A.,	
Inc., 868 F.2d 1251 (Fed. Cir. 1989)	17
D.M.I., Inc. v. Deere & Co., 755 F.2d 1570 (Fed.	
Cir. 1985)	24
Donaldson Co., In re, 16 F.3d 1189 (Fed. Cir.	
1994)	24, 25

Cases—Continued:	Page
Graver Tank & Mfg. Co. v. Linde Air Products Co.,	
339 U.S. 605 (1950) 9, 12, 13, 14, 15,	16, 19
Halliburton Oil Well Cementing Co. v. Walker,	,
329 U.S. 1 (1946)	11
Hybritech Inc. v. Monoclonal Antibodies, Inc.,	**
802 F.2d 1367 (Fed. Cir. 1986), cert. denied,	
480 U.S. 947 (1987)	23
Insta-Foam Products, Inc. v. Universal Foam	20
Systems Inc., 906 F.2d 698 (Fed. Cir. 1990)	20-21
Intel Corp. v. United States Int'l Trade Comm'n,	20-21
946 F.2d 821 (Fed. Cir. 1991)	10
Lemelson v. United States, 752 F.2d 1538 (Fed.	19
	177
Cir. 1985)	17
(Fed. Cir. 1991)	17
Machine Co. v. Murphy, 97 U.S. 120 (1877)	14
Markman v. Westview Instruments, Inc., cert.	
granted, 116 S. Ct. 40 (1995)	16
Pall Corp. v. Micron Separations, Inc., 66 F.3d	
	22, 23
Pennwalt Corp. v. Durand-Wayland, Inc., 833	
F.2d 931 (Fed. Cir. 1987), cert. denied, 485 U.S.	
961, 1009 (1988)	17, 24
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168 F.2d 691 (2d Cir.), cert. denied, 335 U.S. 825	
(1948)	17
Sanitary Refrigerator Co. v. Winters, 280 U.S. 30	
(1929)	4, 16
Standard Indus., Inc. v. Tigrett Indus., Inc.,	
397 U.S. 586 (1970)	14, 21
Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d	
1039 (Fed. Cir. 1993)	24, 25
Wilson Sporting Goods Co. v. David Geoffrey &	
Associates, 904 F.2d 677 (Fed. Cir.), cert. denied,	
498 U.S. 992 (1990)	15, 21

Constitution and statutes:	Page
U.S. Const. Art. I, § 8, Cl. 8 (Patent Clause)	12
35 U.S.C. 101	13
35 U.S.C. 102	13, 18
35 U.S.C. 103	13, 18
35 U.S.C. 112:	
11	13, 22 13
1 6 8, 11, 23,	25, 26
35 U.S.C. 132	26
	26, 27
35 U.S.C. 251-252 8, 11,	
35 U.S.C. 271	19
35 U.S.C. 284-285	19
Miscellaneous:	
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673 (1989)	23
P.J. Federico, Commentary on the New Patent Act, 35 U.S.C.A. 1 (West 1954)	25
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St. L. J. 1421 (1992)	14-15

## In the Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC., PETITIONER

v.

HILTON DAVIS CHEMICAL CO.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

# BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

#### INTEREST OF THE UNITED STATES

Under the equitable doctrine of equivalents, a product or process that does not literally infringe a patent, because it has elements that differ from those specified in the patent claim limitations, may nonetheless be held to infringe if the differences are insubstantial. The United States has an interest in the preservation of a predictable, clearly defined, and consistently administered doctrine of equivalents, to assure that patents provide meaningful scope of protection but are also properly confined to the scope of the claimed invention. The public is thereby assured notice of the limits of exclusionary rights conferred by existing patents, while competition and innovation are fostered. The United States accordingly seeks to encourage foreign nations that provide patents under their own laws to United States citizens and corporations

to afford patent protection commensurate with that provided in the United States by the doctrine of equivalents.

#### STATEMENT

Respondent claimed that petitioner did not literally infringe its patent, but infringed under the doctrine of equivalents. The jury applied the doctrine, found infringement and, determining that the infringement was not willful, awarded 20% of respondent's requested damages. The district court entered judgment accordingly, and enjoined petitioner from using the patented process. On appeal, the court of appeals en banc considered the issue of infringement, and, voting 7-5, affirmed in a per curiam opinion. The en banc court assigned the issue of patent validity to a panel, which affirmed per curiam. Petitioner challenges only the judgment of the en banc court affirming the infringement determination under the doctrine of equivalents.

1. Both parties manufacture dyes for use in food, drugs and cosmetics. The companies must remove byproducts in their dyes in order to meet federal food and drug standards. They have traditionally done so by an expensive and environmentally burdensome process known as "salting out," involving adding salt to the reaction solution of a dye to crystallize the dye, which then may be filtered from the remaining solution to remove impurities.

In 1985, however, respondent obtained patent No. 4,560,746 (the '746 patent) on an alternative dye purification process involving ultrafiltration. Pet. App. 2a-3a, 154a-155a. The '746 ultrafiltration process uses osmosis to separate the impurities from the dye by drawing the impurities through a membrane at certain pressures, pH levels, and membrane pore sizes, leaving a high purity dye. Respondent's process operated under a hydrostatic

pressure of approximately 200 to 400 pounds per square inch gage (p.s.i.g.) and at a pH from approximately 6.0 to 9.0. Pet. App. 2a-3a, 157a-159a.

Meanwhile, by 1986, petitioner had developed a successful ultrafiltration process operating at pressures from 200 to nearly 500 p.s.i.g. and a pH of 5.0, and was using that process commercially. Pet. App. 4a-5a. Petitioner did not learn until October 1986 that in 1985 respondent had obtained the '746 patent. Claim 1 of the '746 patent describes the improvement as:

subjecting an aqueous solution . . . to ultrafiltration [1] through a membrane having a nominal pore diameter of 5-15 Angstroms [2] under a hydrostatic pressure of approximately 200 to 400 p.s.i.g., [3] at a pH from approximately 6.0 to 9.0, to thereby cause separation of said impurities from said dye, said impurities of a molecular size smaller than the nominal pore diameter passing [through] said membrane and said dye remaining in the concentrate.

See id. at 3a-4a. The inventors added the phrase "at a pH from approximately 6.0 to 9.0" in response to objections from the Patent and Trademark Office (PTO), in order to distinguish the preexisting Booth Patent, which operates at a pH above 9.0 and preferably between 11.0 and 13.0. Id. at 4a.

Respondent sued petitioner for patent infringement in 1991. Following a nine-day jury trial, judgment was entered in respondent's favor. Pet. App. 5a.

2. The en banc court of appeals affirmed. Pet. App. 1a-152a. After a Federal Circuit panel had heard oral argument but before it issued a decision, the en banc court decided to rehear the issues relating to infringement under the doctrine of equivalents. The court asked the parties to brief the nature of the proof

required under the doctrine, whether the doctrine is a jury question or an equitable remedy to be decided by the court, and whether, if the court decides the question, application of the doctrine is discretionary. *Id.* at 5a-6a.

The en banc court held that "the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard." Pet. App. 9a. Because the standard is an objective one, "[i]ntent is not an element of infringement" under the doctrine, although "[p]roof of bad faith by an infringer may entitle the patent owner to enhanced damages and attorney fees for willful infringement under 35 U.S.C. §§ 284-285 (1988)." Id. at 12a.

The court noted that it had often measured the insubstantiality of the differences between the claimed and the accused product or process by "the so-called triple identity, or function-way-result, test." Pet. App. 8a. Under that test, "one device is an infringement of another 'if it performs substantially the same function in substantially the same way to obtain the same result." Id. at 9a (quoting Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929)). The court held, however, that factors other than function, way and result may also be relevant to show insubstantiality. Id. at 10a-14a, 17a. For example, if a person reasonably skilled in the art would have known at the time of infringement that an accused element was interchangeable with a claimed element, the court viewed such interchangeability as "potent evidence" that the difference between the two elements was insubstantial. Id. at 11a. The court concluded that "[e]vidence of copying is also relevant," despite the irrelevance of a copyist's subjective intent, because "[w]hen an attempt to copy occurs, the fact-finder may infer that the copyist, presumably one of some skill in the art, has

made a fair copy, with only insubstantial changes." *Ibid*. Evidence of "designing around" the patent claims is also relevant, in the court's view, because "the fact-finder may infer that the competitor, presumably one of skill in the art, has designed substantial changes into the new product to avoid infringement." *Id.* at 13a. The court believed that evidence of independent development is not relevant, however, because, "[w]ithout knowledge, the independent developer could not have set out to make its product or process either similar to or different from the claimed invention," and, given that intent is not a factor, "independent development does not excuse infringement of the patent owner's right to exclude." *Id.* at 13a-14a.

The court further held that "infringement under the doctrine of equivalents is an issue of fact to be submitted to the jury in a jury trial with proper instructions, and to be decided by the judge in a bench trial." Pet. App. 17a. That conclusion followed from the court's observation that this Court has described application of the doctrine as a question of fact. Id. at 14a-16a. The court of appeals noted that this Court also has characterized the doctrine as "equitable," but rejected the suggestion that, in using that label, the Court was referring to "equity in the technical sense"-a traditionally non-jury function-because, in the court of appeals' view, "equity" in this context has been used to refer only to "equity as general fairness." Id. at 16a. Because it believed the doctrine is not equitable in the traditional sense, the court concluded that "[t]he trial judge does not have discretion to choose whether to apply the doctrine." Id. at 18a.

Applying its analysis, the court determined that the jury instructions were not erroneous, and that substantial evidence supported the verdict. Pet. App. 18a-25a. The district court instructed the jury on the doctrine of

equivalents in terms of function, way and result, and did not invite it to consider other factors, but, because the parties argued the case in those terms and did not present other relevant evidence, the court of appeals held that the instructions were not overly narrow as applied to this case. Id. at 19a-21a. The court also concluded that substantial evidence showed that the difference between petitioner's use of a pH of 5.0 and respondent's claimed pH range of 6.0-9.0 was insubstantial, that petitioner sometimes employed pressures in the claimed range of 200-400 p.s.i.g., and that even use of higher pressures "performed the same function-forcing the solution through the membrane-in an equivalent way, to achieve the same result." Id. at 23a-24a. Finally, the court held that prosecution history estoppel did not preclude application of the doctrine of equivalents. Id. at 24a. The inventors amended their claims to limit them to a pH from approximately 6.0-9.0 in order to avoid infringing the Booth patent, which claimed operation at pHs higher than 9.0; "[t]his amendment surrendered pHs above 9, but does not bar Hilton Davis from asserting equivalency to processes such as Warner-Jenkinson's operating sometimes at a pH below 6." Ibid.

In a concurring opinion, Judge Newman stressed the substantial role of technologic innovation in national economic development, and the security that patents provide for commercial investment in innovation. Pet. App. 34a-35a. She also noted the countervailing factor that "technologic growth benefits not only from the activities of the originators, but also from those who improve, enlarge, and challenge." *Id.* at 39a. She observed that, in the absence of the doctrine, patent protection may be so

narrow that "the advantages to imitation (as compared to innovation) become sufficiently large that erstwhile innovators will simply wait for something to imitate." Id. at 42a. If, however, "minor improvements are likely to be captured by the doctrine of equivalents," major, or "leapfrogging," technologic advances will be encouraged over "minor improvements and substantial imitation." Id. at 41a. The doctrine thus promotes "a fairer, less technocratic, more practical patent system; one that is oriented toward encouraging technologic innovation and discouraging free riding." Id. at 44a. The doctrine must, however, be reasonably predictable if it is to serve its purposes, and Judge Newman concluded that the court's decision "does not answer the difficult question of improving the predictability and reducing the uncertainty of technologic decisionmaking." Id. at 48a.

Judge Plager dissented in an opinion joined by Chief Judge Archer and Judges Rich and Lourie. Pet. App. 51a-69a. In Judge Plager's view, "[t]he majority opinion correctly recognizes the notion of protecting legal rights by extending a flexible remedy when the difference between the protected rights of the patentee and the product of the infringer is insubstantial," but "the majority fails to acknowledge-indeed, denies-the equitable source of that remedy." Id. at 61a; see also id. at 52a ("the doctrine has its roots in a court's traditional equity powers"). In his view, infringement generally should be determined by the literal terms of the claim, and the doctrine of equivalents should apply only "in those special cases in which the competitor's product is literally different but the difference is so insubstantial as to constitute a 'fraud on the patent.'" Id. at 59a. He emphasized that the doctrine must have "clear and reviewable boundaries \* \* \* lest the power inherent in the doctrine of equivalents destroy the reliance on the

<sup>&</sup>lt;sup>1</sup> The court also noted that petitioner did not object to the relevant jury instruction. Pet. App. 21a.

scope of claims to which every competitor is entitled." *Id.* at 60a. As it has been applied by juries, however, he believes the doctrine of equivalents has afforded "virtually uncontrolled and unreviewable license" to find infringement. *Id.* at 55a.

Judge Lourie also filed a dissenting opinion, in which Judges Rich and Plager joined. Pet. App. 70a-81a. Because Judge Lourie believed that the jury instructions were erroneous even under the majority's analysis, he would have remanded for a new trial. Id. at 70a-71a. He agreed with the majority that the function-way-result test is not the exclusive measure of equivalency. Id. at 71a-74a. He disagreed, however, that all other factors are subsumed within the determination of insubstantiality. Id. at 74a-75a. In his view, irrtent is also relevant to applicability of the doctrine, id. at 75a-78a, differentiating a "pirate" from one "who unintentionally happens to come close to the claims of a patent," id. at 77a. He also urged that the pioneering status of an invention should affect application of the doctrine: "Pioneers should be given more scope of protection than inventors in a crowded art." Id. at 78a.

Judge Nies also filed a dissenting opinion, in which Chief Judge Archer joined in part. Pet. App. 82a-152a. Although Judge Nies believed the doctrine of equivalents was incompatible with the express terms of Sections 112 ¶ 6 and 251-252 of the Patent Act, she accepted that it "continues to be viable." Pet. App. 104a. In her view, "[t]he meaning of the words in the claim must be defined by the court, a question of law. Also, the scope of protection which may be given the claim beyond its words is a question of law. In addition, the accused product or process must meet the limitations of the claim as defined by the court either literally or by equivalent means or steps, questions of fact." *Id.* at 82a.

Judge Nies faulted the majority for eliminating what she believed are important safeguards in the doctrine. She identified four limitations: First, equivalence must be limited to what was known to those skilled in the art as an equivalent substitute at the time the patent issued. Pet. App. 126a-130a. Second, it must be limited by prosecution history estoppel. Id. at 130a-131a. Third, "a claim to a product or process cannot be construed to encompass the same or substantially the same overall product or process in the prior art." Id. at 131a. Finally, it must not enlarge a claim; enlargement is avoided if the doctrine applies only to each element of a claim, rather than to the invention as whole. Id. at 131a-136a. Judge Nies would have directed a verdict for petitioner in this case, because, in view of petitioner's use of pHs and pressure levels outside the ranges claimed in the patent, any other result would require enlargement of the patent. Id. at 146a-152a.

#### SUMMARY OF ARGUMENT

The doctrine of equivalents is an equitable, extrastatutory theory of patent infringement that plays a useful role in protecting patentees from imitation of their inventions. The Patent Act seeks to balance competing concerns by protecting novel and useful inventions, while making such inventions publicly known and encouraging further competition in innovation. If the doctrine of equivalents is clearly defined, and employed in a manner consistent with the express requirements of the Patent Act, it helps to strike that balance.

As this Court has recognized, outright duplication of a patented invention is rare. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607 (1950). If an imitator can circumvent an existing patent by making mere technical, insubstantial changes to the patented

invention and so avoid the literal scope of the patent claims, patent protection can be rendered meaningless. The doctrine of equivalents affords patentees a remedy against the infringer who has avoided literal infringement only by making insubstantial changes to elements of the claimed invention.

A. The doctrine of equivalents is properly invoked only upon a showing that the differences between the accused device and the patent claims are insubstantial, and that equitable considerations would not preclude a finding of infringement under the doctrine. Important indicators of insubstantiality include, but are not limited to, whether the accused product or process performs substantially the same function in substantially the same way to obtain the same result. The insubstantiality inquiry must be undertaken, not by comparing the accused and the claimed inventions as a whole, but on an element-by-element basis with reference to each limitation in the patent claims. An accused invention need not be sufficiently novel or nonobvious to itself be patentable in order for it to be found to differ substantially from the claimed invention. If the interchangeability of a substituted element with a claimed element is evident to persons of skill in the relevant art, that fact will support a finding of insubstantiality. Insubstantiality does not turn on the state of mind of the alleged infringer, but is an objective inquiry.

B. If an accused device employs substitutions that differ insubstantially from those specified by the patent claim's limitations, it nonetheless may not be found to infringe if such a finding would be inequitable in light of the policies of the Patent Act. Where, for example, a patentee included a limitation in its claims to steer clear of prior art, the doctrine of equivalents cannot be employed to capture the surrendered turf. A patentee

will not necessarily be estopped, however, from claiming infringement by equivalents where it tailored claim language for other reasons, such as to add precision or to comport with the patent specification's explanation of the invention.

C. Section 112 ¶ 6 of the Patent Act, permitting means-plus-function claiming, did not displace the doctrine of equivalents. That paragraph permits patentees to claim a means for performing a function, rather than a particular product or process; such claims are limited, however, by the requirement that the means perform exactly the specified function. Paragraph 6 was added to the Act in 1952 not, as petitioner asserts, to codify or displace the doctrine of equivalents, but to statutorily overrule Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946), which held that means-plus-function language could not be employed at the exact point of novelty in a combination claim. Indeed, there are important areas in which means-plus-function claiming cannot effectively be employed to protect against infringement by insubstantial equivalents.

D. Similarly, the doctrine of equivalents does not conflict with or displace the statutory provisions for patent reissue, 35 U.S.C. 251-252. Under those provisions, a patent that is inoperative or invalid in whole or in part may be reissued in order to correct the specification, or to broaden or narrow the patent's claims to bring them into line with the scope of the specification. The doctrine of equivalents fulfills a different function, focusing not on changing the claims to bring them into line with the specification, but on ensuring that the claims in substance, and not only in form, are enforced. The doctrine of equivalents should not be employed as an extrastatutory means to accomplish reissue without complying

with the reissue procedures and limitations set forth in the Patent Act.

#### ARGUMENT

The Patent Clause of the Constitution authorizes Congress "[t]o Promote the Progress of Science and useful Arts, by securing for limited Times to \* \* \* Inventors the exclusive Right to their \* \* \* Discoveries." U.S. Const. Art. I, § 8, Cl. 8. In implementing the constitutional mandate in the Patent Act, Congress has granted inventors the exclusive right to practice their inventions for a period of years in exchange for public disclosure of those inventions. See, e.g., Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 150-151 (1989). The patent system balances competing concerns. It grants a temporary right to exclude others from making, using and selling a novel and useful invention while also seeking to foster further competition in innovation. The grant of a patent encourages innovation and disclosure of useful knowledge because patent holders can make their inventions public without thereby losing the inventions' commercial value. Patents also encourage further innovation because, as a condition of obtaining a patent, the inventor must describe the invention with enough specificity that the public is taught how to make and use it as a "building block" for new inventions. Id. at 151.

Thus, to serve the patent system's goals, a patent must provide meaningful protection for the disclosed invention, or inventors will choose to keep their inventions secret and impede the flow of new knowledge. See Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607 (1950). But the patent must provide meaningful protection for the public as well. It must give notice of the nature and limits of the exclusive

rights it creates with sufficient clarity that other inventors will know what they may safely use and build upon, and the public will know the extent of the art that can be used without infringement and be able to practice the patented invention when the patent expires.

To those ends, Congress has specified the conditions that must be met to warrant the grant of a patent. First, a patent may be granted only to one who invents or discovers a new and useful product or process. 35 U.S.C. 101. Second, a patent grant is prohibited if the alleged invention is already in the public domain. 35 U.S.C. 102. Third, the subject matter of the patent must not have been obvious to those skilled in the art. 35 U.S.C. 103. The statute also requires specific claiming: The claims to the product or process must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. 112 ¶ 2. The specification must be "in such full, clear, concise, and exact terms" as to enable a person skilled in the art to make and use the patented product or process. 35 U.S.C. 112 ¶ 1.

The doctrine of equivalents can play a useful role in ensuring that the balance struck in the Patent Act is not subverted by meaningless formalism. As the Court observed in Graver Tank, "[o]utright and forthright duplication is a dull and very rare type of infringement." 339 U.S. at 607. Patentees should be protected against imitations that involve only colorable or trivial deviation from the literal terms of the patent claims, and not placed "at the mercy of verbalism." Ibid. The doctrine of equivalents must also, however, not be defined or applied so broadly that it undermines the basic functions of patent claims: clearly to define and limit the scope of the exclusionary rights they confer, and to give the public fair notice of what the patentee owns and what

remains in the public domain. If the doctrine of equivalents is properly limited, retaining the Patent Act's primary focus on the patent claims, the doctrine can continue to serve a valid and useful function consistent with the Act.<sup>2</sup>

## A CLEARLY DEFINED DOCTRINE OF EQUIVALENTS SERVES THE GOALS OF THE PATENT ACT

As the Court stated in Graver Tank, the theory on which the doctrine of equivalents is founded is that, "if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." 339 U.S. at 608 (quoting Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)). That statement should not, however, be understood to invite a direct comparison of the patented device to the accused device; rather, the focus should be on whether the elements of the accused device are the same as the elements set forth in the patent claims. "Technically, the doctrine of equivalents does not expand the coverage of the claims, it just expands the patent holder's right to exclude 'equivalents' of what is claimed." Sean Moorhead, The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement

of the Second Prong of Patent Infringement Charges?, 53 Ohio St. L.J. 1421, 1424 (1992). "To say that the doctrine of equivalents extends or enlarges the claims is a contradiction in terms. The claims—i.e., the scope of patent protection as defined by the claims—remain the same and application of the doctrine expands the right to exclude to 'equivalents' of what is claimed." Wilson Sporting Goods Co. v. David Geoffrey & Associates, 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990).

In our view, a patent owner may establish infringement under the doctrine of equivalents upon a showing (1) that the differences between the accused device and the patent claims are insubstantial, and (2) that there are no equitable considerations that would preclude a finding of infringement under the doctrine. This test serves the doctrine's purpose of preventing the impairment of existing patent protection through making "unimportant and insubstantial changes and substitutions in the patent which, though adding nothing, would be enough to take the copied matter outside the claim, and hence outside the reach of law." Graver Tank, 339 U.S. at 607. It also confines the doctrine to circumstances that are predictable from the standpoint of the potential infringer. The test should be applied only "when the proper circumstances for its application arise," id. at 608; in particular, it should be interpreted consistently with the requirement of specific claiming and other limitations imposed by the Patent Act. For example, equity weighs against allowing a patentee, through the doctrine of equivalents, to recapture claim scope the patentee sur-

<sup>&</sup>lt;sup>2</sup> In our brief amicus curiae in this Court in Standard Industries, Inc. v. Tigrett Industries, Inc., 397 U.S. 586 (1970) (No. 445) (O.T. 1969) (aff'g by an equally divided Court 411 F.2d 1218 (6th Cir. 1969)), the United States opposed use of the doctrine of equivalents to expand the scope of express patent claims (while advocating a narrower approach to afford protection against merely colorable or trivial deviation from the claims). The United States continues to believe that patent claims must be the primary focus of any determination whether infringement occurs, see pages 16-18, infra, but we believe that, if properly confined, a doctrine of equivalents that seeks to give effect to patent claims by reaching only insubstantial deviations from literal claim terms is consistent with that purpose.

rendered in order to avoid prior art and obtain the patent.3

A. The Doctrine Of Equivalents Applies Only Where Each Element Claimed In The Patent, Or A Substitute For Each Element That Differs Only Insubstantially From A Claimed Element, Is Present In The Allegedly Infringing Device

We agree with the court of appeals' basic approach to determining whether differences between a claimed and accused device are insubstantial. See Pet. App. 6a-11a. As that court held, "the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard." Id. at 9a. Analysis of insubstantiality should look to what is known as the "function-way-result test," i.e., whether the accused device "performs substantially the same function in substantially the same way to obtain the same result." Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) (quoted in Graver Tank, 339 U.S. at 608); see Pet. App. 9a. That test is not, however, the exclusive test of equivalency. A court should consider "all evidence relevant to the substantiality of the differences." Id. at 10a.

The insubstantiality inquiry must be applied on an element-by-element basis. See Corning Glass Works v. Sumitomo Elec. U.S.A., Inc., 868 F.2d 1251, 1259 (Fed. Cir. 1989) ("An equivalent must be found for every limitation of the claim somewhere in an accused device"); Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 935 (Fed. Cir. 1987) (en banc), cert. denied, 485 U.S. 961, 1009 (1988); id. at 949-954 (additional views of Nies, J.); Lemelson v. United States, 752 F.2d 1538, 1551 (Fed. Cir. 1985) ("It is \* \* \* well settled that each element of a claim is material and essential, and that in order for a court to find infringement, the plaintiff must show the presence of every element or its substantial equivalent in the accused device."). Under the element-by-element requirement, however, one element in an accused device may be the equivalent of more than one element in a claim, and, similarly, a single claimed element may be met by more than one element in the accused device. See Corning Glass Works, 868 F.2d at 1259; Royal Typewriter Co. v. Remington Rand, Inc., 168 F.2d 691, 693 (2d Cir.), cert. denied, 335 U.S. 825 (1948).

The element-by-element requirement under the doctrine of equivalents mirrors the requirement that a patentee establishing literal infringement must demonstrate that every limitation of the disputed claim is found in the accused device. See Pall Corp v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed. Cir. 1995); London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1539 (Fed. Cir. 1991). Under equivalency analysis, as under literal infringement, the claimed matter must remain the touchstone for a determination of infringement. See Corning Glass Works, 868 F.2d at 1259 ("In the All Elements

This Court's decision in Markman v. Westview Instruments, Inc., cert granted, 116 S. Ct. 40 (1995) (No. 95-26), will shed light on, if not determine, the question much mooted in the court of appeals regarding the proper roles of the jury and the trial judge in the application of the doctrine of equivalents. Although the Court's decision in Markman might, of course, change our view, we are inclined to believe that reference of the entire issue to the jury in this case was erroneous because insubstantiality is, in essence, a matter of claim interpretation, and it involves an equitable extension of infringement remedies to equivalents. See generally Pet. App. 63a-69a (Plager, J., dissenting); id. at 79a-81a (Lourie, J., dissenting); id. at 82a (Nies, J., dissenting).

rule, 'element' is used in the sense of a limitation of a claim.") (emphasis omitted).4

The key question in applying the doctrine of equivalents is whether the differences between the elements of the claimed device and the elements of the accused device are insubstantial. The test of insubstantiality, while easily stated, is difficult to define with specificity. Two considerations may, however, help to define that inquiry. First, an accused device need not be independently patentable in order for it to be found to be substantially different from the claimed device. Thus, an accused device may be found to have more than insubstantial differences from the patented device even though the accused device is not considered to be novel or nonobvious as required for patentability under the Act. See 35 U.S.C. 102, 103.

Second, the fact that the interchangeability of a substituted element for a claimed element would have been known to one skilled in the relevant art at the time of alleged infringement is a useful indicator of insubstantiality. It ensures that the doctrine operates consistently with the statutory policy that members of the public, such as competitors seeking to make further advances in the field, be on notice of activities that infringe. If persons of skill in the relevant art would have found it evident that an equivalent substitution could be made for an element of the claimed invention, the extent to which the substitution diverges from the claimed element is

likely insubstantial. See *Graver Tank*, 339 U.S. at 609, 612. Expert witness testimony on that subject can thus be useful in determining insubstantiality.<sup>6</sup>

In our view, the subjective state of mind of the alleged infringer is not relevant to infringement by equivalents. We recognize that *Graver Tank* explained the purpose of the doctrine of equivalents as avoiding "fraud," "piracy" and "stealing" of patented inventions, and that some have understood those references to invite inquiry into the alleged infringer's subjective bad faith or intent. See Pet. App. 75a-78a (Lourie, J., dissenting). Petitioner similarly would limit the doctrine to "bad faith 'copying.'" Pet. 29-30. Literal infringement, however, does not turn on intent, see 35 U.S.C. 271; *Intel Corp.* v. *United States Int'l Trade Comm'n*, 946 F.2d 821, 832 (Fed. Cir. 1991), and we submit that the same rule—an objective standard—should apply to infringement by equivalents. 6

From the perspective of the statutory policy of protecting the claimed invention, a device that has the same or equivalent elements as the claimed invention, and fulfills the same function in the same way to achieve the same result, is equally harmful to patent rights whether the equivalency was intended or not. The statutory policy of patent protection does not provide any basis for distinguishing between, for example, an

<sup>&</sup>lt;sup>4</sup> Insubstantiality, however, necessarily depends on the context—an inquiry that requires the court to take into account the overall function of the accused device. Substitution of a digestible acid for a non-digestible one in a metal polish might, for example, be an insubstantial change, whereas such an acid substitution in a citrus soft drink might well be found to be substantial.

<sup>&</sup>lt;sup>5</sup> Unlike obviousness affecting validity under Section 103, the focus in determining equivalency is not on the time of application, but on the time of infringement. Moreover, the equivalency inquiry looks not to the obviousness of the allegedly infringing device as a whole, but to the obviousness of the substitution, in view of the prior art on the substitute at the time of the substitution.

<sup>&</sup>lt;sup>6</sup> As the court of appeals correctly noted, however, the willfulness of an infringement may properly affect the availability of damages and attorneys' fees. Pet. App. 12a, 20a; see 35 U.S.C. 284-285.

patented invention that ultimately fails to steer clear of the claims, and an outright effort to copy a patented invention. Moreover, if intent were determinative, a device developed with knowledge of the patent could be held to be infringing, while the very same device independently developed by one ignorant of the patent would be non-infringing. Such a result would ill serve the Patent Act's policy of providing uniform and predictable protection for a claimed invention. Thus, the fact that petitioner in this case developed the ultrafiltration process independently of respondent's process, without knowledge of the patent or any bad-faith effort to replicate it, should not be material to the application of the doctrine.

#### B. The Doctrine Of Equivalents Does Not Apply Where It Would Yield Inequitable Results

Even if an accused device employs substitutions that, as an objective matter, differ only insubstantially from the elements specified in the claim limitations, infringement under the doctrine of equivalents should not be found where it would be inequitable in view of the policies of the Patent Act.

The principal circumstance in which the doctrine of equivalents should not be available to a patentee is where the patentee seeks to use the doctrine to obtain what he was required, as a condition of patentability, to surrender during prosecution of the patent. This limitation on the doctrine is known as prosecution history estoppel (or file wrapper estoppel). It prevents a patentee from obtaining, through the doctrine of equivalents, protection that he could not have obtained, or that he refrained from obtaining, from the PTO at the time the patent was issued. However, as the court correctly noted in *Insta-Foam* 

Products, Inc. v. Universal Foam Systems, Inc., 906 F.2d 698, 703 (Fed. Cir. 1990), "[w]henever prosecution history estoppel is invoked as a limitation to infringement under the doctrine of equivalents, 'a close examination must be made as to, not only what was surrendered, but also the reason for such a surrender.'"

A common reason that limitations are added to claims during claim prosecution is to steer clear of prior art; the doctrine of equivalents cannot then be applied to recapture prior art that, had it not been surrendered, would have defeated the patent ab initio. "[S]ince prior art always limits what an inventor could have claimed, it limits the range of permissible equivalents." Wilson Sporting Goods, 904 F.2d at 684. Respondent in this case could not, for example, assert infringement by equivalents against an accused device operating at a pH greater than 9.0, because respondent surrendered the higher pH range during prosecution of its claim in order to avoid the prior art described in the Booth patent. A patentee should not be permitted to take inconsistent positions in the PTO and before the court regarding the scope of the prior art. Moreover, the rights of the public to utilize non-patented technology should not be foreclosed by the inability to prove directly (by reference to amendments made before the PTO) that the patentee drafted its claims to avoid prior art. If, in light of the prior art, a substantially different question would have been presented to the PTO in the issuance proceedings if the claims had literally extended to the allegedly infringing device, then it cannot be said that the public was on sufficient notice that the patent that was issued would extend to that device. See Brief for the United States as Amicus Curiae at 15-17, Standard Industries, Inc. v. Tigrett Industries, Inc., 397 U.S. 586 (1970) (No. 445) (O.T. 1969).

As the lower-end pH limitation in this case illustrates, not every limitation added during prosecution of a patent is added to avoid prior art. Estoppel will not necessarily apply based on prosecution history showing that claim language was used or changed for reasons other than avoidance of prior art. In this case, there apparently was no prior art on ultrafiltration at pHs less than 6.0. The court of appeals did not identify why respondent surrendered pHs lower than 6.0. Pet. App. 24a. Judge Plager in dissent, however, pointed to the trial testimony of respondent's inventor, Dr. Cook, that "though the [claimed ultrafiltration] process would work to separate the dye from the impurities at pH-values as low as 2.0, a solution with a pH below 6.0 would cause 'tremendous foaming problems in the plant." Id. at 62a. Thus, it appears that the claims may have been limited to what was "enabled" as of the date of the patent applicationi.e., to what could be described in sufficient detail to enable a person of ordinary skill in the art to practice it. See 35 U.S.C. 112 ¶ 1.

Amendments before the PTO to reflect the scope of what was enabled or to add specificity raise considerations different from those raised by amendments to avoid prior art. The purpose of the enablement requirement is not to limit the scope of the patent right, but to ensure that the invention has been fully disclosed so that, upon the patent's expiration, the public can practice the invention. Similarly, "when claim changes or arguments are made in order to more particularly point out the applicant's invention, the purpose is to impart precision, not to overcome prior art. Such prosecution is not presumed to raise an estoppel, but is reviewed on its facts, with the guidance of precedent." Pall Corp., 66 F.3d at 1220 (collecting cases). In order to be sufficiently specific, a patent need not be a catalogue of all existing

technology; "a patent need not teach, and preferably omits, what is well known in the art." Hybritech Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1384 (Fed. Cir. 1986), cert. denied, 480 U.S. 947 (1987). Thus, it may be appropriate for a patentee not to specify or to claim all known equivalents, and a failure to do so should not necessarily estop it from obtaining protection under the doctrine of equivalents. In sum, "[t]here is no all-encompassing rule that estoppel results from all claim changes, or all arguments, whatever their cause or purpose." Pall Corp., 66 F.3d at 1220.

#### C. Section 112 ¶ 6 Of The Patent Act, Permitting Means-Plus-Function Claiming, Did Not Displace The Doctrine Of Equivalents

Petitioner argues that 35 U.S.C. 112 ¶ 6 codifies the doctrine of equivalents. Pet. 25. Paragraph 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a speci-

Of course, when an accused equivalent (meeting the objective standard of insubstantiality) could not have been known because it was developed or discovered only after the patent issued, the case for application of the doctrine of equivalents becomes especially clear. For example, a claim to a chemical composition might include an inactive filler as a minor, unimportant ingredient. After the patent issues, a competitor of the patentee might manufacture a composition exactly as claimed but use a different, inactive filler, unknown in the art at the time the patent application was filed, that performs exactly as those literally covered by the claim. Such a substitution, once it became available, might be known to persons of skill in the relevant art to be interchangeable with the claimed filler, and yet it would not have been possible to include the accused element in the patent because it did not exist at the time of issue. See Martin Adelman & Gary Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 707-708, 712-715 (1989) (endorsing legitimacy of doctrine of equivalents to capture equivalents generated by new technology).

fied function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

Claims written in this format are known as "means-plus-function" claims. See, e.g., In re Donaldson Co., 16 F.3d 1189, 1193 (Fed. Cir. 1994) (en banc). Using means-plus-function claiming, a patentee may broadly claim a means for performing a function, rather than a particular product or process. The PTO and the courts, in determining the limits of the claim scope, will then refer to the structure described in the patent specification (and to equivalents thereof). Id. at 1195; Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042 (Fed. Cir. 1993) (second clause of paragraph 6 "confines the breadth of protection otherwise permitted by the first clause" limiting the applicant to "the structure, material, or acts in the specification and their equivalents").

Contrary to petitioner's assertions, the doctrine of equivalents was not codified in the Patent Act of 1952. See, e.g., Pennwalt, 833 F.2d at 933-934; Valmont Indus., 983 F.2d at 1042-1043; D.M.I., Inc. v. Deere & Co., 755 F.2d 1570, 1575 (Fed. Cir. 1985). This Court in Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342 (1961), stated that the provisions defining infringement in the new Patent Act "left intact the entire body of case law on direct infringement." That body of case law included Graver Tank—the case said to establish the modern doctrine of equivalents—and its progenitors. As far as we are aware, there are no contemporaneous indications that Congress intended to codify the doctrine of equivalents, or to overrule Graver Tank. See generally

P.J. Federico, Commentary on the New Patent Act, 35 U.S.C.A. 1, 24-26 (West 1954).

As the Federal Circuit has explained, "[t]he record is clear on why paragraph six was enacted. In Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946), the Supreme Court held that means-plus-function language could not be employed at the exact point of novelty in a combination claim. Congress enacted paragraph six, originally paragraph three, to statutorily overrule that holding." In re Donaldson, 16 F.3d at 1194 (parallel citations omitted). "The doctrine of equivalents has a different purpose and application than section 112." Valmont Indus., 983 F.2d at 1043. Whereas Section 112 ¶ 6 provides guidance for interpreting claims phrased in means-plus-function language, the doctrine of equivalents "prevents a copyist from evading patent claims with insubstantial changes." Ibid.

There are specific reasons why Section 112 ¶ 6 cannot satisfactorily fill the role of the doctrine of equivalents. For example, means-plus-function claiming will not always have been used where it might, in hindsight, have proved useful to protect a patented invention. Indeed, means-plus-function claiming is particularly inadequate for ensuring the protection of chemical and biotechnological inventions. The elements of a given chemical are generally so numerous, and their properties so varied and, in many cases, not fully known, that it is difficult to anticipate at the time of patent application precisely how means-plus-function claims might usefully be framed. Instead, because chemical inventions are susceptible of precise chemical definition, a chemical patent will typically be claimed using a generic formula. Yet, if conventional claiming is used, a new chemical may be made or a substitute discovered that is structurally different from the patented chemical, but, for purposes of the

invention, does not operate any differently (or only insignificantly so). In that case, the claim will not be literally infringed so, in the absence of a doctrine of equivalents, the patent will be evaded. The doctrine of equivalents can serve to protect the patent in such circumstances.

Hence, petitioner's suggestion that Section 112 ¶ 6 codifies the doctrine of equivalents, precluding judicial application of the doctrine beyond that paragraph, should be rejected.

#### D. The Doctrine Of Equivalents Does Not Conflict With Sections 251-252, The Patent Act's Reissue Provisions

The presence in the Patent Act of Sections 251-252, authorizing patent reissue, also does not, contrary to petitioner's contention (Pet. 26; see also Pet. App. 103a-104a (Nies, J., dissenting)), conflict with or negate the utility of the doctrine of equivalents. Reissue of a patent that is wholly or partly inoperative or invalid is statutorily authorized to correct "a defective specification or drawing," or to broaden or narrow the patent claims when, in view of the specification, the patentee claimed "more or less than he had a right to claim in the patent." 35 U.S.C. 251. The reissue provision states that "[n]o new matter shall be introduced into the application for reissue." Ibid. By "new matter" the statute refers to additions to the abstract, specifications or drawings that disclose the invention. Cf. 35 U.S.C. 132 ("No amendment shall introduce new matter into the disclosure of the invention."). The scope of the claims in the reissued patent may be broader than the scope of the claims in the original patent only if the reissue is applied for within two years of the grant of the original patent (but even then may not exceed the scope of the specification). 35 U.S.C. 251.

Sections 251-252 fulfill a function distinct from that of the doctrine of equivalents. Reissue focuses on the specification-allowing it to be corrected, and the claims conformed to it. The doctrine of equivalents, in contrast, focuses on the existing claims themselves, and seeks to ensure that they are given full substantive effect. Unlike reissue, the doctrine of equivalents is not, for example, a method of expanding claims to conform to the specification. Rather, it simply authorizes a determination of infringement where the elements of the accused device differ only insubstantially from the elements claimed. Under a properly defined doctrine of equivalents, the existing claims remain the touchstone, and are not, in effect, judicially reissued, or set aside in favor of an overall equivalency inquiry focused on the scope of the invention disclosed in the specification. Of course, it would be a misapplication of the doctrine of equivalents to use it as an extra-statutory means to accomplish the same result as reissuance without following the statutorily prescribed reissuance procedure.

#### CONCLUSION

The judgment of the court of appeals should be vacated, and the case remanded to the court of appeals for further proceedings consistent with the foregoing analysis.<sup>8</sup>

Respectfully submitted.

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**APRIL 1996** 

<sup>&</sup>lt;sup>8</sup> See also page 16 note 3, supra.

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No. 95-728

Supreme Court, U.S. F 1 L E D

APR 11 1996

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# In The Supreme Court of the United States

October Term, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

٧.

HILTON DAVIS CHEMICAL CO.,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

#### BRIEF ON BEHALF OF THE AMERICAN AUTOMOBILE MANUFACTURERS ASSOCIATION AS AN AMICUS CURIAE IN SUPPORT OF THE PETITIONER

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### Table of Contents.

Table of Contents	i
Table of Authorities	ii
I. The Interest of Amicus Curiae	1
II. The Certified Question	2
III. Summary of Argument	2
IV. Argument	6
A. The Fundamental Tension Between Law and Equity in Patent Infringement Case	6
B. The Patent Statute Requires Specificity in Claiming in Order to Inform the Public of the Boundaries of the Patented Invention	9
<ol> <li>The Public Has A Right to Practice Outside the Literal Language of the Patent Claims Free of the Risk of Unforeseeable Infringement Liability</li> </ol>	9
<ul> <li>Stimulation of Further Innovation is an Important Public Benefit of the Patent System</li> </ul>	9
<ul> <li>Encouragement of the Marketing of Com- petitive Products Promotes the Constitu- tional Goal of the Patent System "To Pro- mote Progress"</li> </ul>	11
<ol> <li>Reliance on the Doctrine of Equivalents Circumvents the Role of the Patent Office and Undermines the Basis for the Statutory Presumption of Validity</li> </ol>	11
C. The Doctrine of Equivalents Destroys Certainty and Imperils Innocent Innovators	14
<ol> <li>The Uncertainty Engendered by the Doctrine of Equivalents Imposes a Dilemma on All Po-</li> </ol>	
tential Competitors of the Patentee	14

TABLE OF CONTENTS (CONT D)	
2. Indefiniteness Clouds the Entire Spectrum of American Technology and Commerce	of 15
D. The Proper Balance Between Law and Equity i Patent Infringement Cases Should Be Restored	
<ol> <li>The Federal Circuit Majority Has Lost Sigh of the Special Equity Roots of the Doctrine of Equivalents</li> </ol>	
<ol> <li>The Court Should Restore the Fundamenta Restriction of the Doctrine of Equivalent Only to the Equity Restraint Against Fraud of Patents</li> </ol>	s
V. Conclusion	21
Table of Ausbandeles Clark	
Table of Authorities Cited.	
CASES.	
Custom Accessories v. Jeffrey-Allen Industries, 80 F.2d 955 (Fed. Cir. 1986)	7
Graver Tank & Mfg. Co., Inc. v. Linde Air Products Inc., 339 U.S. 605, 70 S.Ct. 854 (1950)	passim
Great Northern Corp. v. Davis Core & Pad Co., Inc. 782 F.2d 159 (Fed. Cir. 1986)	, ,
Hilton Davis Chemical Co., Warner-Jenkinson Company, Inc., 62 F.3d 1512 (Fed. Cir. 1995)	passim
Hughes Aircraft Co. v. United States, 717 F.2d 135 (Fed. Cir. 1983)	1 6
Laitram Corp. v. Cambridge Wire Cloth Co., 863 F.2 855 (Fed. Cir. 1988)	d 9
London v. Carson Pirie Scott & Co., 946 F.2d 153 (Fed. Cir. 1991)	4 19

TABLE OF AUTHORITIES CITED (CONT.D)	111
Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995) (en banc)	19
Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931 (Fed. Cir. 1987) (en banc)	7, 8
Read Corp. v. Portec, Inc., 970 F.2d 816 (Fed. Cir. 1992)	19
Slimfold Manufacturing Co., Inc. v. Kinkead Industries, Inc., 932 F.2d 1453 (Fed. Cir. 1991)	10
Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570 (Fed. Cir. 1995)	19
STATUTES AND RULES.	
United States Constitution	
Art. I, sec. 8, cl. 8	1, 19
35 U.S.C. § 101	10
35 U.S.C. § 112 3, 6, 8,	9, 14
35 U.S.C. § 251	13
35 U.S.C. § 252	13
35 U.S.C. § 282	11
MISCELLANEOUS.	
AAMA Motor Vehicle Facts & Figures (1995)	16n
Employment and Earnings, U.S. Department of Labor, Bureau of Labor Statistics (1995)	15n
New Plant and Equipment Expenditures, U.S. Department of Commerce, Bureau of the Census (1995)	16n
Survey of Current Business, U.S. Department of Com- merce, Bureau of Economic Analysis (1995 report)	16n
Working for Our Customers: A Patent and Trademark Office Review, Fiscal Year 1994, U.S. Department of Commerce (1994)	, 17n

# In The Supreme Court of the United States

October Term, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

HILTON DAVIS CHEMICAL CO.,

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ON WRIT OF CERTIORARI TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

#### BRIEF ON BEHALF OF THE AMERICAN AUTOMOBILE MANUFACTURERS ASSOCIATION AS AN AMICUS CURIAE IN SUPPORT OF THE PETITIONER

#### I. THE INTEREST OF AMICUS CURIAE

The American Automobile Manufacturers Association (hereinafter "AAMA") is a non-profit national trade association. Its member companies, Chrysler Corporation, Ford Motor Company and General Motors Corporation, are principally engaged in the production and sale of motor vehicles.

AAMA has no interest in which party may ultimately prevail in this case upon remand pursuant to this Court's legal guidance. Its sole interest is in the law that this case should establish. Consent documents from both parties have been filed with this brief.

To compete effectively in the worldwide automotive market, AAMA companies are heavily involved in technological development and the large financial investments needed to support that development. It is their view that decisions on when and how to undertake such investments cannot be made rationally without the assurance of a principled resolution of disputes concerning patents, and a consequent ability to determine effectively, generally without recourse to expensive litigation and unpredictable risks, the extent of existing patent rights. Hence, AAMA supports the Petitioner's argument to this Court that the patent law doctrine of equivalents, as set forth in the decision of the Court of Appeals for the Federal Circuit, misconstrues the prior decisions of this Court by permitting the finder of fact in patent infringement litigation to consider and to apply the doctrine of equivalents as an alternative theory of infringement liability in all cases without regard to equitable factors applicable to the parties.

#### II. THE CERTIFIED QUESTION

Inherent in the Question presented by the Petitioner is the request that this Court balance the statutory requirement for definiteness in patent claims with the equitable protection of the inventor from fraud upon the patent. Also inherent in the Question is whether the doctrine of equivalents, a wholly equitable doctrine, is for the court or for the jury to apply in the circumstances of a given case.

#### III. SUMMARY OF ARGUMENT

In accepting this case for review, the Court has acknowledged the Federal Circuit's request for guidance in the balance between law and equity in patent infringement cases. This Court last spoke on that fundamental issue of patent law over forty-six years ago in Graver Tank & Mfg. Co., Inc. v. Linde Air Products, Inc., 339 U.S. 605, 70 S.Ct. 854 (1950). At that time, the Court confirmed that under the equity doctrine of equivalents, the trial

chancellor may deter "the unscrupulous copyist" who misappropriates a patented invention by making only insubstantial changes calculated solely to avoid the literal language of the patent claims. 339 U.S. at 607. The doctrine as then set out encouraged the disclosure of inventions by preserving for the inventor the benefit of his invention while sparing the inventor from the mercy of mere verbalism:

"The essence of the doctrine is that one may not practice a fraud on a patent." 339 U.S. at 608.

When the scope of commercial activity excluded by a patent is enlarged beyond the express wording of the patent claims, however, the doctrine of equivalents is inherently at odds with the legal requirements set forth in the Patent Act to delineate the boundaries of the limited monopoly bestowed on inventors in exchange for the public disclosure of their inventions. Specifically, the Patent Act mandates that an application for patent "shall include . . . a specification" which contains a "written description of the invention concluding with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." (35 U.S.C. § 112, emphasis added.)

A patent is a limited exemption from the laws otherwise prohibiting monopolies, and the rights of the public must be acknowledged in defining the scope of patent protection. Among these is the right of the public, in confronting the patents of others, to avoid infringement by avoiding the subject matter expressly claimed by the inventor. Fair notice to the public of the boundaries of a patent promotes investment in the development of further "new and useful improvement" inventions, and encourages the marketing of lawfully competitive products "to promote progress" in furtherance of the constitutional goals of the patent system. (Art. I, sec. 8, cl. 8.)

There exists, therefore, a tension as between the legal requirement for certainty and the application of an equitable remedy to prevent injustice through fraud. Such a tension is not uncommon in civil litigation, and the doctrine of equivalents in patent cases is not unique in pursuing a balanced resolution of that tension. It is necessary, however, that an equitable remedy for the private litigant must not overwhelm the statutory mandates of the law. Equity determinations should remain reserved for the trial judge as chancellor in equity.

Essential to the balancing of this tension between law and equity is an appreciation of the real-world consequences of the balance struck. Understandably, courts have focused in these cases primarily on the parties before them: the patent owner and the accused infringer. Yet the impact of the infringement decision, because it involves the legal construction of a government-granted, limited monopoly, extends beyond the immediate parties and impacts the national interest as well.

In particular, because expansion of patent claims beyond their plain language undoes that certainty and predictability commanded by the patent statute as a fundamental condition for patentability, broadened construction of patent claims imposes a correspondingly increased burden on commerce which is not expressly contemplated by the patent statute. The patentee who cannot prove infringement except by resort to the equity doctrine of equivalents to expand the patent grant beyond its express terms imposes a dilemma of uncertainty and unpredictability not only on the accused infringer but on every other potential competitor as well.

Under the statutory plan adopted by Congress to carry out the Constitutional mandate, the public has the right to assess the legal scope and meaning of the words in a patent claim as a definite "metes and bounds" demarcation of the protected invention. The public is entitled to rely on the statutory mandate of definiteness in the claiming of an invention. Correspondingly, the public should enjoy the right to be free of an indeterminate and unknown risk of infringement by a future jury finding of "equivalency", made regardless of the absence of copying and fraud on the patent by the accused infringer.

Since the Graver Tank decision, district courts and courts of appeals, including the Federal Circuit, have grappled with the mechanics of applying the doctrine of equivalents in their patent infringement analyses. As various tests have been developed for assessing whether or not the differences between an accused process or device and the claimed invention are "insubstantial", the lower courts have lost the focus originally placed by this Court on the equities existing between the parties. Today, infringement under the doctrine of equivalents is routinely submitted to the finder of fact as no more than another, alternative ground for recovery: a mere second tine of a two-tine test of infringement. As a consequence,

[The doctrine of equivalents] is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose.

Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., 62 F.3d 1512, 1538 (Fed. Cir. 1995) (Plager, dissenting).

For these reasons, AAMA, as amicus curiae to the Court, urges that the doctrine of equivalents be once again restored to the purpose for which it was created and applied by this Court in *Graver Tank*: an equity exception to the otherwise strict commandment for definiteness in patents.

#### 7

#### IV. ARGUMENT

A. The Fundamental Tension Between Law and Equity in Patent Infringement Cases

The Patent Law mandate that a specification shall conclude with a claim which particularly points out and distinctly claims the subject matter which the applicant regards as his invention (35 U.S.C. § 112), is vital to a balance, in furtherance of the Constitutional purpose of the Patent Law, between the limited exclusionary rights granted to the inventor and the otherwise unburdened rights of the public to compete.

This Court mandated in *Graver Tank* that the equity doctrine of equivalents *may* enlarge the scope of a patent beyond the express words of its claims, but only to deter "the unscrupulous copyist." 339 U.S. at 607. The essential balance to be struck lies between the encouragement of the disclosure of inventions by their inventors and the securing to such inventors of benefit of their inventions without placing them at the mercy of mere verbalism because of insubstantial differences: that is, to prevent "a fraud on a patent." 339 U.S. at 608.

The decisions of the Federal Circuit since its creation in 1982, in considering and applying the doctrine of equivalents, have often been divided and inconsistent. So, too, is this split evident in the issuance of the opinion below in this case. Earlier decisions of the Federal Circuit recognized and attempted, however, to accommodate the needed balance between law and equity in determining patent infringement. For example, in *Hughes Aircraft Co.* v. *United States*, 717 F.2d 1351 (Fed. Cir. 1983), the Federal Circuit early noted:

The doctrine is judicially devised to do equity. "Courts have also recognized that to permit imitation of a patented invention which does not copy every literal detail would be to convert the protection of the patent grant into a hollow and useless thing."

717 F.2d at 1361 (quoting Graver Tank, 339 U.S. at 607).

Similarly, in Great Northern Corp. v. Davis Core & Pad Co., Inc., 782 F.2d 159, 166 (Fed. Cir. 1986), the Federal Circuit had further cautioned that a trial court should "hesitate to expand this doctrine too far, to the point where patent counsel cannot rely at all on what the claims recite when advising on infringement."

Then, in *Pennwalt Corp.* v. *Durand-Wayland*, *Inc.*, 833 F.2d 931, 934 n.1 (Fed. Cir. 1987) (*en banc*), the Federal Circuit attempted to provide limiting guidance in defining the doctrine:

The doctrine of equivalents is limited in that the doctrine will not extend (1) to cover an accused device in the prior art, and (2) to allow the patentee to recapture through equivalence certain coverage given up during prosecution.

Yet, the Federal Circuit did not speak with one voice in the matter. Judge Nies, offering "additional views" in *Pennwalt* suggested that the public's interest in certainty with respect to the boundaries of patent claims requires adherence to the statutory requirements of claim definition:

Congress placed in the statute the requirement that the patent application "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." . . . That requirement reflects the need for notice of what constitutes violation of a patentee's rights. . . . An infringement standard as vague as application of the "invention as a whole," which permits claim limitations to be read out of the claim, would nullify the statutory requirement and violate due process.

833 F.2d at 954. Judge Newman, offering further "commentary," observed that the doctrine of equivalents is susceptible neither to precise formulation, nor to abdication to the whim of the jury:

The doctrine can not, by its nature, be reduced to rigid rules. Determination of equivalency is not unlike determination of substantial similarity in copyright law or determination of nonobviousness in patent law. Such determinations require judicial wisdom, not a catalog of narrow rules. . . . The vitality of the doctrine of equivalents has been tested and reaffirmed for a hundred years. . . . [T]he doctrine depends for its implementation on judicial wisdom.

#### 833 F.2d at 970.

Thus, the Federal Circuit has in the past recognized the need to maintain a proper balance between the legal requirement of claim specificity and the equitable consideration of maintaining protection of the full scope of the patentee's invention:

The doctrine of equivalents creates "one of the many difficult dichotomies that lurk in the lacunae of patent law. . . . On one side rests the very important, statutorily-created necessity of employing the clearest possible wording in preparing the specification and claims of a patent, one of "the most difficult legal instruments to draw with accuracy." . . . On the other lies the equally important, judicially-created necessity of determining infringement without the risk of injustice that may result from a blindered focus on words alone. . . . The former, set out in 35 U.S.C. § 112, recognizes a competitor's need for precise wording as an aid in avoiding in-

fringement. The latter is called the "doctrine of equivalents." While requiring a look at all the words while resisting their tyranny, and requiring, because the claims measure the invention, a look at all claim limitations, the doctrine, in a proper case, "temper[s] unsparing logic and prevent[s] an infringer from stealing the benefits of an invention." . . . In that sense, the doctrine recognizes a fact of the real business world: words are not appropriated; claimed inventions are.

Laitram Corp. v. Cambridge Wire Cloth Co., 863 F.2d 855, 856-57 (Fed Cir. 1988).

- B. The Patent Statute Requires Specificity in Claiming in Order to Inform the Public of the Boundaries of the Patented Invention
  - The Public Has A Right to Practice Outside the Literal Language of the Patent Claims Free of the Risk of Unforeseeable Infringement Liability

In confronting the patents of others, the public is entitled to enjoy a fundamental freedom to steer clear of the risk of unintended infringement by avoiding, in good faith, the *literal* definition of the inventor's *claimed* subject matter. Industry and commerce should not only be permitted, but should even be encouraged, to exercise this right because of the important public benefits which result from the stimulation of further innovation and the fostering of fair competition in the marketplace.

a. Stimulation of Further Innovation is an Important Public Benefit of the Patent System

The public disclosure of the patented invention and how to make and use it, required under 35 U.S.C. 112, is a fundamen-

mental element of the policy underlying the patent system. The early disclosure of the invention by publication serves an invaluable public purpose in encouraging investment in the development of *further* "new and useful improvement" inventions. 35 U.S.C. § 101. The Federal Circuit has clearly recognized this vital objective:

Designing around patents is, in fact, one of the ways in which the patent system works to the advantage of the public in promoting progress in the useful arts, its constitutional purpose. . . . Inherent in our claim-based patent system is also the principle that the protected invention is what the claims say it is, and thus that infringement can be avoided by avoiding the language of the claims. . . . It is only when the changes are so insubstantial as to result in "a fraud on the patent" that application of the equitable doctrine of equivalents becomes desirable.

Slimfold Manufacturing Co., Inc. v. Kinkead Industries, Inc., 932 F.2d 1453, 1457 (Fed. Cir. 1991); Yet again in this case:

The ability of the public successfully to design around — to use the patent disclosure to design a product or process that does not infringe, but like the claimed invention, is an improvement over the prior art — is one of the important public benefits that justify awarding the patent owner exclusive rights to his invention.

Hilton Davis, 62 F.3d at 1520.

b. Encouragement of the Marketing of Competitive Products Promotes the Constitutional Goal of the Patent System "To Promote Progress"

11

The Constitutional foundation of the Patent Law encourages the marketing of lawfully competitive products "to promote progress" in furtherance of the goals of the patent system. Art. I, sec. 8, cl. 8. The Federal Circuit has reiterated that "designing around" the boundaries of a patent "is the stuff of which competition is made and is supposed to benefit the consumer." Hilton Davis, 62 F.3d at 1520. The investment of capital resources into the development and marketing of any product, of course, is determinatively influenced by the perceived risk and reward attendant to the investment. In addition to the ordinary risks of marketing a product, the increased risk to an independent developer that a jury may unpredictably expand the claims of another's patent to encompass the product which literally avoids infringement can effectively stifle competition far beyond the legitimate bounds of the grant.

 Reliance on the Doctrine of Equivalents Circumvents the Role of the Patent Office and Undermines the Basis for the Statutory Presumption of Validity

An issued United States patent enjoys a statutory presumption of validity in litigation against infringers. 35 U.S.C. § 282. The presumption arises from the examination process to which the patent application has been subjected in the Patent Office, resulting in the issuance of claims of carefully defined scope. In deference to this agency expertise, the patent examiner is initially presumed to have done the job properly in allowing the patent to issue. See, e.g., Custom Accessories v. Jeffrey-Allen Industries, 807 F. 2d 955, 961 (Fed. Cir. 1986).

The doctrine of equivalents, when broadly construed, undoes this examination of the scope of claims crafted in the Patent Office. Expansion of claims by the fact finder during later infringement litigation deprives the public of the expert scrutiny of the agency responsible for ensuring that issued patents contain valid claims. The statutory presumption of validity for such expanded claims does not exist.

Where a patent originally issues with claims later thought by the patentee to be narrower in scope than those to which the inventor was otherwise entitled, the patentee is not without remedy. The Patent Act contains express remedial provisions for reissue of just such a "defective" patent:

Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, upon surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent.

35 U.S.C. § 251. The statute and its implementing regulations set forth appropriate conditions and requirements for obtaining a reissue patent. Those requirements are fundamental to Congress' intent and purpose, and apply to all patentees. Once reissued, broadened patent claims are clear and definite for evaluation by all prospective competitors. Indeed, their definiteness is enhanced by the limited statutory time available for reissue, and the intervening rights which may arise from prior reliance by the public on the language of the original, narrower claims.

The application of the doctrine of equivalents as a means for patent claim broadening should only arise when demanded by equity to remedy a fraud upon a patent by the "unscrupulous copyist." Expansive application of the doctrine of equivalents where the requirements for reissue have not been met nullifies the statutory framework expressly crafted by Congress.

An important aspect of the reissue provisions of the Patent Act is the express limitation of the time during which a patentee is permitted to seek a broadening of the claims of a patent. Section 251 of the Patent Act requires that such "broadening reissue" applications be filed within two years of the issuance of the patent. Moreover, 35 U.S.C. § 252 protects, to a significant extent, the commercial activities of competitors by affording "intervening rights" to those who made substantial investment in reliance on those original claims.

The use of the doctrine of equivalents as a mere alternate theory of infringement upsets this statutory scheme by discouraging the patentee from seeking reissue.<sup>2</sup> By relying instead on the doctrine of equivalents to expand the scope of the patent, the patentee avoids the reissue proceeding and the risk that the patent office, applying its expertise, will refuse

The present case amply illustrates the dimensions of the problem where claims are expanded without regard to the equities, which were deemed irrelevant by the Federal Circuit. The patent claim granted by the Patent Office following extensive proceedings expressly restricts the protected invention to ultrafiltration at "a pressure of approximately 200 to 400 p.s.i.g., at a pH level of approximately 6.0 to 9.0". Hilton Davis at 1515. By contrast, the claim as enlarged by the jury and the trial court under color of the doctrine of equivalents covers ultrafiltration "except at pressures above 500 p.s.i.g. and pHs above 9.01". Id. at 1516. Accordingly, as to both the pressure and pH limitations, the lower boundaries of the original patent grant were completely erased. Further, as to the pressure limitation, the upper boundary of the original patent grant was substantially raised. In this process of "re-granting" the patent under the doctrine of equivalents, the sole patent granting body authorized by Congress under its Constitutional mandate, the Patent Office, was totally bypassed without due consideration of any compelling equities.

<sup>&</sup>lt;sup>1</sup>Of the 201,544 United States patent applications filed in fiscal 1994, only 340 were reissue applications. Working for Our Customers: A Patent and Trademark Office Review, Fiscal Year 1994, U.S. Department of Commerce (1994), at 62.

to broaden the claims. Importantly, the patentee can evade the two year statutory limitation, and the jury can be asked to apply the claims broadly at any time during the full patent term. The party who invests in reliance on the presumptively definite limitations of the original patent claims, and who would have acquired intervening rights under a timely reissue examination proceeding, is placed at risk by a doctrine of equivalents applicable by the Federal Circuit as an automatic second test of infringement, regardless of the equities between the parties.

- C. The Doctrine of Equivalents Destroys Certainty and Imperils Innocent Innovators
  - The Uncertainty Engendered by the Doctrine of Equivalents Imposes a Dilemma on All Potential Competitors of the Patentee

The potential competitor, facing a patentee who may rely on the equity doctrine of equivalents to exclude competition outside the literal boundaries of the patent claims, cannot reasonably anticipate the scope of "equivalents" that a jury might apply in future infringement litigation. This uncertainty exists despite the public right under the statutory framework of the Patent Act to assess the legal scope and meaning of a patent as a definite demarcation of the invention under its literal wording, and despite the public right to rely on the statutory mandate of definiteness in the claiming of an invention. 35 U.S.C. § 112. The Court should correct this hazard of uncertainty, made in the misconstruction of this Court's ruling in *Graver Tank*, and restore to the public its right to

be free of an indeterminate and unknown risk of infringement by a future jury finding of "equivalency."

The doctrine of equivalents should be returned to its proper role as an exceptional tool of equity to deter the unscrupulous copyist. Only the trial judge, in the exercise of sound judicial discretion, may properly assess the relevant equities existing between the parties and remedy the unfair conduct of an unscrupulous copyist. The doctrine of equivalents should no longer be "a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose." Hilton Davis, 62 F.3d at 1538 (Plager, dissenting).

#### 2. Indefiniteness Clouds the Entire Spectrum of American Technology and Commerce

The success of the American domestic economy and its future growth depend heavily on multi-product and broad-range marketers such as the American automobile manufacturers. The American automotive manufacturing industry employs over 933,000 Americans and contributes over \$285 Billion.

interpreted Supreme Court opinions on the matter, and how, largely by default, we have permitted the practice of patent litigation to take the shape it now is in. It is our responsibility to address the situation, and to take effective corrective action. We and the Supreme Court are the only two appellate courts with authority to do this. It is regrettable that, in today's opinion, the majority abdicate this responsibility, leaving to the Supreme Court the obligation of attending to the problem if it is to be attended to at all.

62 F.3d at 1538-39 (Plager, J., dissenting). However, the majority, as echoed by Judge Newman, felt that the solution to the problem, to the extent it exceeds the majority's reading of Graver Tank, was beyond its purview.

Indeed, any change in the legal and factual fundamentals so explicitly laid out by the Supreme Court are beyond our judicial authority.

62 F.3d at 1529 (Newman, J., concurring).

<sup>&</sup>lt;sup>3</sup> In this case, four judges of the Federal Court recognized that this problem was one largely of its own making:

Responsibility for these problems and for the unsatisfactory situation they create lies with the judges. It is the result of how we have

<sup>\*</sup>Employment and Earnings, U.S. Department of Labor, Bureau of Labor Statistics (1995 preliminary figure.)

or 4.2% of our Gross Domestic Product annually. Exports of motor vehicles and parts from the United States in 1994 exceeded \$57 Billion, accounting for 11.4% of all U.S. merchandise exports. American motor vehicle and equipment manufacturers invested over \$15.8 Billion in capital assets in 1994. In addition, American automobile manufacturers spent over \$13 Billion on research and development activities in 1994.

Because of this material impact which the American automotive manufacturing industry has upon the overall competitive economy of the country, the corresponding impact of the patent system on that industry is of great importance to the general public. When extended to include the added economic importance of other domestic industries similarly affected by the grant of United States patents, the issues raised by the question presented to the Court here become vital to the needed balance between incentive and reward for all industries.

In pursuing their diversified interests, American industries necessarily confront a great range of patents properly assessed by them to be not infringed by the definite, literal language of their claims. However, the uncertainty, prior to litigation, of the scope of any patent claim in the hands of a jury or judge creates an enormous burden on industry and commerce when it is multiplied across the broad spectrum of technologies and the great numbers of patents encountered even in a single industry. The statutory mandate of definiteness in the claiming of a patentable invention is effectively erased when the equity

determination of infringement is left to the uncertainty of future jury fact findings of equivalency. The definite thus becomes the unpredictable.

In fiscal 1994, the last year for which complete statistics are presently available, over 113,000 United States patents issued. The patent library maintained at AAMA contains many thousands of unexpired patents applicable to the automotive industry. For an automobile manufacturer investing substantial sums (amounting to billions of dollars) in the research and development of new products and processes over the multi-year term required for new vehicle creation, it is an immense task to maintain an awareness of the literal claim limitations of possibly relevant patents issued in the field. When the task is compounded to require anticipation of the extent to which such claims might later be enlarged beyond their express terms by a jury or judge applying the doctrine of equivalents, the burden becomes impossible as a practical matter, and the corresponding risk that looms is incapable of rational assessment. Yet, where the doctrine of equivalents is made routinely available without regard to compelling equities, every patent literally not infringed still remains a continuing source of possible ambush, based on an unknown and unknowable future contention of infringement against a wholly independent and "innocent" development. Indeed, the expanded scope of judicially enlarged claims may likely be established for all practical purposes against a party who is free of any inequitable copying because of adjudications under different circumstances against other parties and other products.

<sup>&#</sup>x27;Survey of Current Business, U.S. Department of Commerce, Bureau of Economic Analysis.

<sup>\*</sup>Id.

New Plant and Equipment Expenditures, U.S. Department of Commerce, Bureau of the Census (1994 Report) (planned capital spending by U.S. businesses).

<sup>\*</sup>As published in AAMA Motor Vehicle Facts & Figures (1995) and compiled from the company annual reports of Chrysler Corporation, Ford Motor Company and General Motors Corporation, as filed with the Securities and Exchange Commission.

<sup>&</sup>quot;Working for Our Customers: A Patent and Trademark Office Review, Fiscal Year 1994, U.S. Department of Commerce (1994)

- D. The Proper Balance Between Law and Equity in Patent Infringement Cases Should Be Restored
  - The Federal Circuit Majority Has Lost Sight of the Special Equity Roots of the Doctrine of Equivalents

The intent of this Court in defining the doctrine of equivalents forty-six years ago was clearly stated. The essence of the doctrine is that one may not practice a fraud on a patent. Graver Tank, 339 U.S. at 608.

Over the years, however, the doctrine has devolved into a mere alternative theory of recovery for patent infringement. Restriction of the doctrine only to those cases in which equity demands its application to remedy a copyist's fraud on the patent through "insubstantial" differences has been abandoned:

[i]n doctrine of equivalents cases, this court's allusions to equity invoke equity in its broadest sense—equity as general fairness.

Hilton Davis, 62 F.3d at 1521.

The doctrine of equivalents has no equitable or subjective component.

Id. at 1523. This is a far cry from the previous position of the Federal Circuit as a guardian of the public right:

Application of the doctrine of equivalents is the exception, . . . not the rule, for if the public comes to believe (or fear) that the language of patent claims can never be relied on, and that the doctrine of equivalents is simply the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims, then claims will cease to serve their intended purpose. Competitors

will never know whether their actions infringe a granted patent. . . . This equitable doctrine evolved from a balancing of competing policies, each of which supports the Constitutional purpose of promoting the "useful arts." U.S. Const. art. I, 8, cl. 8.

London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991).

The Federal Circuit has now abandoned this carefully crafted balance between law and equity in patent cases. That balance can only be restored by this Court.

The Court Should Restore the Fundamental Restriction of the Doctrine of Equivalents Only to the Equity Restraint Against Fraud on Patents

The determination of patent infringement is a two step process. First, the Court must interpret and define the scope of the patent claims. Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570 (Fed. Cir. 1995); Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc); Read Corp. v. Portec, Inc., 970 F.2d 816, 821 (Fed. Cir. 1992). The jury is then charged to compare the claims, as properly interpreted, to the accused product or device. Id.

This should be the full extent of the jury's role in the infringement analysis. The jury should not be asked to assess the equitable factors which inform the application of the doctrine of equivalents. The doctrine should be applied only as an ultimate equity determination by the court, not as a question of fact by the jury.

The restoration of definiteness to the patent system by adherence to the statutory requirements, except where equity otherwise demands, best furthers the constitutional purpose of "promoting progress." When competitors can rely in good faith on the language allowed by the Patent Office in the claims of the issued patent, without the fear of arbitrary and virtually unbounded expansion of the claims by a jury in an infringement suit, then the incentives of the patent system will be revitalized. Investment in further improvements to inventions disclosed in patents will be rewarded in the marketplace without fear of being undone in the courtroom. Those who misappropriate the patented invention by inequitably exploiting the limitations of claim language will, however, still remain subject to the proper invocation of the equity doctrine of equivalents, by the trial judge, to prevent injustice. Patent applicants, for their part, will be further motivated to obtain the best allowable patent claims through comprehensive examination in the Patent Office, using supplemental examination procedures such as reissue where appropriate, and will no longer be rewarded for circumventing the statutory procedures in favor of jury-made claim expansion after the fact.

#### V. CONCLUSION

For all of the reasons set forth above, AAMA urges the Court to re-affirm and clarify its prior jurisprudence and hold that the doctrine of equivalents is an equitable remedy to be applied only at the discretion of the Court, and not by a jury. Only in this way can the proper balance between law and equity in patent infringement cases be restored. The application of the equitable doctrine of equivalents must be restricted only

to those cases where compelling equity considerations require its application by the Court to prevent injustice through fraud.

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IN THE

APR 11 199

# Supreme Court of the United Statesousek

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

-v.-

HILTON-DAVIS CHEMICAL CO.,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

# BRIEF OF AMICUS CURIAE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

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April 11, 1996

# TABLE OF CONTENTS

		PAGE
STATEM	IENT OF INTEREST	1
SUMMA	RY OF ARGUMENT	2
ARGUM	ENT	4
I.	Infringement Under The Doctrine Of	
6	Equivalents Must Require That Any	
	Departure From The Literal Claim Is	
	Insubstantial	4
II.	The Determination Of The Breadth Of	
	Protection Accorded Patent Claims Must	
	Be Independent Of The Defendant	7
III.	Determining The Scope Of The Claims	
	Under The Doctrine Of Equivalents Is For	
	The Court	9
CONCL	USION	16

#### TABLE OF AUTHORITIES

Cases	AGE
Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950)	, 13
Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed Cir.), cert. granted, U.S, 116 S.Ct. 40 (1995) (No. 95-26)	9
Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502 (1917)	4
Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929)	, 16
Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904)	5
SRI International v. Matsushita Electric, 775 F.2d 1107 (Fed. Cir. 1985)	2, 13
Wilson Sporting Goods Co. v. David Geoffrey & Associates, 904 F.2d 677 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)	15
Winans v. Denmead, 56 U.S. (15 How.) 330 (1853)	3, 14
Statutes	
35 U.S.C. § 112	15
35 U.S.C. § 271(a)	15

#### IN THE

# Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC.,

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\_v.\_

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Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

# BRIEF OF AMICUS CURIAE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

#### STATEMENT OF INTEREST

The American Intellectual Property Law Association ("AIPLA") is a national association of more than 10,000 members, primarily attorneys, whose interests and practices lie in the areas of patent, copyright, trademark, trade secret, and other intellectual property law. AIPLA attorneys are employed by private law firms, corporations, universities, and governments, and they represent both patent owners and competitors of patent owners.

The AIPLA has no interest in either of the parties to this litigation or in the outcome of this case, other than its interest in seeking correct and consistent interpretation of the law and litigation procedures relating to patents. The AIPLA has obtained the consent of both petitioner Warner-Jenkinson and respondent Hilton Davis to file this amicus brief.

#### SUMMARY OF ARGUMENT

A United States patent, like a plot of real estate, is a property right circumscribed by a defined boundary. For any entity contemplating an investment, it is as important to know with certainty where lie the boundaries of its competitor's patent as it is to know the boundaries of its neighbor's land. Trespass on either kind of right risks loss of the investment.

The exclusionary right accorded by a patent is a grant given and enforced by the United States government. Since 1870, the applicable statutes have required that every patent contain a metes and bounds description, in the form of claims that particularly point out and distinctly claim the scope of that exclusive right. The examination process that results in the grant of the patent, focuses on those claims, and has as its principal objective defining with precision in the words of the claims the parameters of what the applicant invented and what is patentable to him under the various statutory criteria. In that proceeding, the applicant is free to choose the terms and scope of the claims, and does so with the expectation that the language agreed on will delineate the right to exclude others.

Yet, even after that exercise, persons who seek to know the limits of the patent property right cannot simply rely on the literal meaning of the metes and bounds description. Patents are accorded a scope beyond the literal terms of their claims under the doctrine of equivalents, a judge-made doctrine that blurs the sharp boundary lines that the statute mandates. The head-on conflict between the two has divided prior panels of this Court and the Court of Appeals for the Federal Circuit.

This case provides the opportunity to settle definitively to what extent, and in what manner, the doctrine of equivalents can be applied without contravening the statutory requirement that the patent claims distinctly define the invention. The AIPLA believes the doctrine must remain available to patentees to assure that patent infringement will be determined by substantive merit rather than formalistic literalism. But the AIPLA nevertheless urges this Court to come down on the side of minimizing uncertainty by assuring that "equivalents" will be given both limited scope and consistent application. Specifically, the AIPLA recommends the following conclusions:

- The Federal Circuit was correct when it held that infringement under the doctrine can be found only when the departure from the literal scope of the claim was insubstantial.
- 2. The exclusivity provided by a patent must be predictable and consistent as against all prospective infringers. Therefore, neither the application of the doctrine nor the scope of equivalents accorded should depend on equities that are peculiarly related to the acts or intent of a specific infringer.
- 3. Determining the range of equivalents to which a patent claim is entitled is a determination of its scope—its construction or interpretation. It is therefore the function of the judge to instruct the jury on how far equivalency expands the effective scope of the claim and the function of the jury then to determine whether the accused device falls within that court-defined area.

The landmark decisions of this Court, Winans v. Denmead, 56 U.S. (15 How.) 330 (1853) and Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950) ("Graver Tank II") were accompanied by vigorous dissents. The Federal Circuit en banc hearing in the present case produced a per curiam opinion joined by seven judges, a single-judge concurrence, and five judges dissenting in three separate opinions.

#### ARGUMENT

# I. Infringement Under The Doctrine Of Equivalents Must Require That Any Departure From The Literal Claim Is Insubstantial

The claims of a patent have been likened to a metes and bounds description of real property. Motion Picture Patents Co. v. Universal Film Mfg. Co., 243 U.S. 502, 510 (1917). They are intended to give notice to the public, and to competitors in particular, of the outer limits of the area within which the patentee can invoke the power of a court to enforce the government-granted right to exclude competitors. The claims inform competitors what they can and cannot do. It is the words of the claims that give definiteness to the boundaries of exclusivity.

It has long been recognized, however, that, if a patentee were limited strictly to the words of the claim, competitors might appropriate "the invention" without infringing "the claims". Winans v. Denmead, 56 U.S. (15 How.) 330, 341-343 (1853). Therefore, if we are to avoid the undesirable consequences that result when a literal claim reading is too harsh, the enforceable scope of the claim must, in appropriate circumstances, be expanded beyond that which would otherwise be encompassed by the words themselves in order for the patentee to receive meaningful enjoyment of the patent right. A major objective of this Court's precedent and the Federal Circuit's decision in the instant case was to articulate a meaningful standard that achieves the appropriate balance between the inherently antagonistic principles of clear demarcation of the patent right and flexibility in the search for fairness.

This Court's most recent restatement of the doctrine of equivalents, in Graver Tank II, endorsed the three-part test for equivalency previously expressed in Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) ("if [the accused device] performs substantially the same function in substantially the same way to obtain the same result"). 339 U.S. at

608. After Graver Tank II, "function, way, result" became the touchstone for every equivalency determination.

The majority below acknowledged "the so-called triple identity, or function-way-result, test" as one method for measuring the substantiality of the differences between the claimed invention and the product accused of infringement, 62 F.3d at 1518, but held that test is not the entirety of the inquiry required. Rather, it said, the overriding and eventually dispositive question is whether departure from the literal scope of the claims is substantial or insubstantial:

With this case, this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard.

#### 62 F.3d at 1518.

The AIPLA believes that the "substantiality of the differences" standard is not only consistent with this Court's precedent, it is required by it. This Court has stressed that infringement under the doctrine of equivalents turns on whether the difference between the accused product and the patent claim is "substantial and not merely colorable," Singer Mfg. Co. v. Cramer, 192 U.S. 265, 286 (1904). The Graver Tank II opinion nowhere says that "function, way, result" has dispositive significance. To the contrary, the majority opinion is replete with references to insubstantial differences: "unimportant and insubstantial changes and substitutions... adding nothing"; "minor variations"; "so insubstantial"; "colorable only". 339 U.S. at 607, 610, 612.

While fairness to the patentee is served by according the claims a scope that includes departures from the literal scope that are colorable and insubstantial, it does not require extension beyond those limits. There is no suggestion in *Graver Tank II*, or any other decision of this Court, that the "function,

way, result" test should provide a vehicle to stretch patent claims far enough to encircle distinctions that embody meaningful, substantial differences.

The majority below was correct in holding that similarity of function, way and result alone is not always enough for infringement by equivalents—for that similarity can be present even where there are substantial differences between the product accused of infringement and the invention of the patentee's claims. Judge Lourie, while a dissenter below, agreed with the majority—and the precedents from this Court—that substantiality of the differences need always be considered, and provided a pertinent illustration of why that is so:

One can also consider the example of the well-known analgesics aspirin and ibuprofen. These compounds have the same function (to provide analgesia, anti-inflammatory activity, and lower temperature), do so in the same way (by inhibiting prostaglandin synthesis), and give the same results (kill pain, relieve inflammation, and lower fever). Yet, they have different structures, which makes them different compounds, and no knowledgeable person would consider that a claim to aspirin would be infringed by the sale of ibuprofen.

62 F.3d at 1546.

Reading Graver Tank II to endorse or permit extension of the claim beyond insubstantial differences would ignore much of the reasoning clearly expressed in that opinion, give the patentee control over things that are not properly within his invention, and vitiate the statutory requirer int of distinctness. The "substantiality of differences" standard applied by the majority below is consonant with this court's precedent and appropriately reconciles the need for certainty with the need for fairness.

# II. The Determination Of The Breadth Of Protection Accorded Patent Claims Must Be Independent Of The Defendant

The doctrine of equivalents was created to avoid placing the inventor "at the mercy of verbalism". Graver Tank II, 339 U.S. at 607. It is "equitable" in the sense that it is founded on a search for fairness to patentees, to avoid depriving inventors of the benefit of his invention and to prevent a fraud on a patent. Id. at 607-08.

However, fairness to patentees wrought by the flexibility provided in the doctrine of equivalents comes at the expense of certainty. To the extent the clear literal boundaries of the claims are made fluid and subject to a broadening interpretation in litigation, it becomes commensurately more difficult for the public to know what infringes and what does not.

Moreover, the scope of a patent—whether literal or by operation of equivalency—must remain constant. If the pursuit of fairness turns its focus to the motives and acts of the accused infringer as a measure of what infringes, consistency is lost. Motive, in patent cases, is irrelevant to whether infringement exists. It has application only in fashioning an appropriate remedy.

For those reasons, the AIPLA believes, and urges this Court to hold, that the scope of the claims under the doctrine of equivalents is independent of the identity and subjective considerations peculiar to the specific alleged infringer.

Although fairness to the patentee has an equitable flavor, the scope of a claim under the doctrine of equivalents is properly determined by application of objective criteria: The content of the prior art, the description in the specification, statements made and positions taken in the pre-grant administrative prosecution proceedings, the pioneer or incremental nature of the invention, and subsequent developments in the art. If the focus of the analysis shifts from such objective criteria to subjective ones, such as the intent of the accused

infringer, then it is possible to have the anomalous result of a device being held infringing when made by one competitor yet not infringing when made by another. The AIPLA urges that the determination of whether a particular departure from the literal scope of a claim is substantial should be the same irrespective of the identity and motives of the defendant. As the majority opinion below correctly pointed out:

The Supreme Court applied the doctrine of equivalents in Graver Tank to prevent "fraud on a patent," 339 U.S. at 608, 70 S.Ct. at 856, not fraud by the accused infringer. As Graver Tank demonstrates, preventing "fraud on a patent" involves an objective assessment of the substantiality of the differences between the claimed and accused products or processes.

#### 62 F.3d at 1519.

In Graver Tank II, this Court referred to party-specific elements—whether the accused infringer was guilty of copying as opposed to having independently developed the accused product. 339 U.S. at 607-09. The AIPLA agrees with the majority opinior below that such party-specific factors may sometimes be considered, but should be applied with caution, and only for the purpose of assessing whether the differences between the literal claim scope and the accused device are insubstantial and, (as a wholly separate matter) whether punitive damages are appropriate. The mental state of the infringer should not be used as a factor to expand or contract the scope of equivalents to which a claim is entitled. A patent claim should have no broader effective scope against a willful copyist than it does against a good faith innovator.

As the Court of Appeals pointed out, neither intent nor knowledge is an element of infringement. 62 F.3d at 1519, 1520. One who designs a product with no knowledge of a patent is as much an infringer as one who deliberately copies. The question is whether the product infringes, not how the accused infringer developed the product. Knowledge and

intent should not be accorded independent status that can vary the scope of equivalents. If the accused infringer copied the patented invention or it made changes which even it recognized were insubstantial, that could be relevant evidence tending to show that the differences lack substance. But that evidence would not be party-specific. It would have evidentiary value with respect not only to the actor's own product but with respect to similar products of other competitors as well.

The AIPLA believes that, while the doctrine of equivalents remains an important part of the patent system, it is equally important that it be applied in a fashion that reduces, as much as possible, the uncertainty and risk of inconsistency that it introduces. This can be accomplished by making its application dependent on factors which are not specific to the particular litigants. Factors such as motive and knowledge may be taken into account in determining damages, but not in determining the scope of coverage to which the claims are entitled.

# III. Determining The Scope Of The Claims Under the Doctrine of Equivalents Is For The Court

One of the points noted in the Federal Circuit's Markman opinion<sup>2</sup> that argues for allocating the claim interpretation function to the judge is that a patent is a government grant of exclusivity, the scope of which should be determined with certainty and consistency. 52 F.3d at 978-79. Indeed, a patent is the result of a determination made by a government agency. The very essence of the examination process is the application by the United States Patent and Trademark Office of prescribed statutory criteria to arrive at and grant, under government seal, the claim that the agency has determined defines the ambit of the justified exclusionary right. Analo-

Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir. 1995) (en banc), cert. granted, \_\_ U.S. \_\_, 116 S.Ct. 40 (1995) (No. 95-26).

gies drawn to the interpretation of statutes, agency rulings, and other government actions are apt.

Determining what is included within the effective scope of a claim under the doctrine of equivalents could be viewed in either of two ways.

If deciding the permitted scope of equivalence is treated as a question of claim construction, the court should do it and present that defined claim scope to the jury, after which the jury's role should be to resolve any fact disputes as to whether the accused process or device is within the fence established by the court. That procedure produces a record of how and why the equivalence was determined and a consistency of definition from case-to-case.

Under the majority view below, however, equivalence is not a question of claim interpretation. The court determines only the literal scope of the claim; the jury decides whether an accused device or process that does not meet that literal definition is nonetheless equivalent to it. That alternative provides no record of the analysis made and carries the risk that precisely the same variant can be held equivalent in one case, but non-equivalent in a later one, with both verdicts largely insulated from appellate revision due to the "substantial evidence" standard.

The need for certainty and the rationale for having judges interpret patent claims apply to all determinations of their scope, whether literal or under the doctrine of equivalents. All claim scope determinations involve considering the same elements—the words of the claim, their meaning to persons skilled in the art, the description in the patent specification, statements made and positions taken during the prosecution, and the prior art. It is simply illogical and inconsistent to require that the court consider all of those elements to give the jury a definitive literal meaning of the claim, but then allow the jury to take a second look at the same elements and thereby find an "equivalent" exclusionary right of potentially far wider scope.

Precedent does not mandate that illogical result. Nor does allocating to the court all aspects of claim interpretation-literal and equivalent-mean that the jury is left out of the case or relegated to a rubber stamp role. Questions of what the claims are should be decided by the judge. Factual issues of what the accused device or process is, and whether it falls within the judge-defined claim scope, are reserved to the jury. For example, in the case under review here, the patent claim recites a "pH" range of 6.0 to 9.0. The judge, applying all the factors bearing on claim interpretation, could find that the claim was not limited to that literal scope, but was entitled to a range of equivalents spanning 5.0 to 9.0. With that construction fixed, the jury would decide (if there were a disputed issue of fact) whether the "pH" of the accused process was within that range. If the patentee contended the defendant used a pH of 5.2, and the infringer contended it was 4.8, the jury would resolve that fact issue.

That procedure parallels how literal infringement is determined, and it is supported by precedent. In Winans, 56 U.S. at 338, this Court parsed the functions and roles of the judge and jury in the infringement determination process:

On such a trial, two questions arise. The first is, what is the thing patented; the second, has that thing been constructed, used, or sold by the defendants.

The first is a question of law, to be determined by the court, construing the letters-patent, and the description of the invention and specification of claim annexed to them. The second is a question of fact, to be submitted to a jury.

This Court concluded that "equivalents" were included in the scope of the claim as a matter of interpretation under the law (56 U.S. at 342, 343, emphasis added):

It is generally true, when a patentee describes a machine, and then claims it as described, that he is understood to intend to claim, and does by law actually

cover, not only the precise forms he has described, but all other forms which embody his invention. . . .

. . . .

Patentees sometimes add to their claims an express declaration, to the effect that the claim extends to the thing patented, however its form or proportions may be varied. But this is unnecessary. The law so interprets the claim without the addition of these words.

. . . .

And, therefore, the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms.

#### When the Winans Court then added:

Whether, in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense above explained, is a question for the jury, and the court below erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative[,]

56 U.S. at 344, that did not mean that the entire question of what equivalents were embraced by the claim was taken from the Court and shifted to the jury. It simply meant that, after the Court decided the legal scope of the claim, including its deemed-in-law range of equivalents, the jury was then required to ascertain whether the accused device fell within or without that scope.

In its en banc decision in SRI International<sup>3</sup>, the Federal Circuit correctly described the two-step approach to the

infringement determination, with separate judge and jury functions:

Contrary to what MEI's counsel wrote the district court, claims are not construed "to cover" or "not to cover" the accused device. That procedure would make infringement a matter of judicial whim. It is only after the claims have been construed without reference to the accused device that the claims, as so construed, are applied to the accused device to determine infringement.

Infringement, literal or by equivalence, is determined by comparing an accused product not with a preferred embodiment described in the specification, or with a

commercialized embodiment of the patentee, but with the properly and previously construed claims in suit.

775 F.2d at 1118, 1121.

Although the en banc majority in SRI International recognized that all aspects of claim interpretation are reserved to the Court, the en banc majority in the present case held that all aspects of equivalency are reserved to the jury. It did that because it (i) recognized that a finding of equivalence is a finding of fact (which is true but not determinative) and (ii) treated the doctrine of equivalents as though it had no impact on claim scope (which is not true). 62 F.3d at 1520-21, 1528.

That what is equivalent is a question of fact is beyond dispute. This Court plainly said so in *Graver Tank II*<sup>4</sup>. 339 U.S. at 609. But not all fact issues are for the jury. As the *Winans* Court noted, getting to a proper construction of the claim (i.e. "determin[ing] what is the thing patented") requires the Court to make a number of factual inquiries. 56 U.S. at 338.

<sup>&</sup>lt;sup>3</sup> SRI International v. Matsushita Electric, 775 F.2d 1107 (Fed. Cir. 1985) (en banc).

Graver Tank II did not discuss the respective roles of judge and jury because the trial was to the bench.

In this, as in most patent cases, founded on alleged improvements in machines, in order to determine what is the thing patented, it is necessary to inquire.

- 1. What is the structure or device, described by the patentee, as embodying his invention.
- 2. What mode of operation is introduced and employed by this structure or device.
- 3. What result is attained by means of this mode of operation.
- 4. Does the specification of claim cover the described mode of operation by which the result is attained.

## 56 U.S. at 338-39 (emphasis added).

Deciding the permissible range of equivalents is an exercise in determining the effective scope of the claim in issue. As Winans says, the inclusion of equivalents is the way the law interprets the claim. Id. at 343.

## The Hilton Davis majority said:

This dissent errs, however, in arguing that application of the doctrine of equivalents enlarges the claim scope. Instead the doctrine of equivalents provides the same protection to the substance of the claim scope provided by the doctrine of literal infringement.

#### 62 F.3d at 1528.

If the majority was correct that applying the doctrine of equivalents does not enlarge the claim scope, that conclusion can only be based on what this Court said in Winans—that the law interprets the claim to cover both its literal wording and things equivalent to it. 5 If that is the effect of the law on the

claim, then one cannot logically separate the literal scope from the legally-effective scope, and both are for the court to decide.

In Wilson Sporting Goods Co. v. David Geoffrey & Associates, 904 F.2d 677 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990), the Federal Circuit (Rich, J.) similarly said that applying the doctrine of equivalents did not change the scope of the claims, but only expanded the right to exclude. Yet, despite that semantic distinction, the Federal Circuit fashioned a revised, hypothetical patent claim that literally included the allegedly equivalent device, as the only practical way to test whether according that scope of exclusivity was permissible in light of the prior art. The Court concluded that testing the allowable range of equivalents in the context of a redefined claim was preferable to looking at the allegedly infringing device because it "permits a more precise analysis than determining whether an accused product (which has no claim limitations on which to focus) would have been obvious in view of the prior art." Id. at 684 (emphasis in original).

Infringement is the unauthorized making, using, selling, offering to sell, or importation of a patented invention. 35 U.S.C. § 271(a). The patented invention is the thing that is particularly pointed out and distinctly claimed in the claims found at the end of the patent document. 35 U.S.C. § 112. The exclusionary right granted by the patent must, therefore, be coterminous with the interpretation of what those claims mean, and interpretation of the claims is exclusively for the court.

Relegating the determination of the scope of equivalents to the court is no more unworkable than having the court decide any other issue of claim interpretation. The litigants will identify the claim element or limitation in issue. The court will consider the submissions of the parties relevant to how far and wide that limitation can be extended by equivalency (just as the court decides the meanings of technical terms in the claims) and so instruct the jury.

The majority could not have meant that the doctrine of equivalents does not expand the effective reach of the claim beyond its *literal* scope. Here, the claim recites a pH range of 6.0 to 9.0, yet Warner-Jenkinson was held an infringer under the doctrine because it used a pH of 5.

In some cases, defining the claim scope under the doctrine of equivalents will resolve the question of infringement and leave nothing for the jury to decide (just as deciding the literal scope of the claim would resolve literal infringement when there is no fact issue about what the accused device or process is or how it works). But that is entirely appropriate, because it is the province of the court to declare the scope of the exclusive right as a question of law, and the province of the jury to decide whether the infringer's activities fall within that right as a question of fact. As this Court explained in Sanitary Refrigeration, when there is no dispute over what is the structure and operation of the accused device, infringement under the doctrine of equivalents reduces to a question of law:

Furthermore upon the undisputed evidence the question of infringement resolves itself in each [of the cases under review] into one of law, depending on a comparison between the structure disclosed on the face of the patent and the device shown in the Dent latch, and the correct application thereto of the rule of equivalency.

280 U.S. at 36.

### CONCLUSION

This Court should affirm the majority opinion below in its holdings that (i) the basic standard for determining the scope to which a patent claim is entitled under the doctrine of equivalents is "insubstantial difference" and (ii) the only evidence considered to determine whether that standard is met should be objective, not the state of mind of the accused infringer.

This Court should reverse the majority opinion below with respect to its holding that equivalence is wholly an issue for the jury and should hold that the scope of a patent claim under the doctrine of equivalents is an issue of claim interpretation to be made by the court.

Respectfully submitted,

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### IN THE

# Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

V.

## HILTON DAVIS CHEMICAL CO.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

# BRIEF FOR INFORMATION TECHNOLOGY INDUSTRY COUNCIL AND INTEL CORPORATION AS AMICI CURIAE IN SUPPORT OF PETITIONER

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# TABLE OF CONTENTS

TAI	BLE O	F AUTHORITIESii
INT	ERES	T OF AMICI CURIAE1
SUN	MAI	RY OF ARGUMENT3
ARC	GUME	NT5
I.	CO	E DOCTRINE OF EQUIVALENTS SHOULD BE RRECTLY DEFINED IN ORDER TO FULFILL PIVOTAL ROLE IN PATENT INFRINGEMENT IGATION
П.	INF ISSU JUD	E ROLE OF JUDGES IN DETERMINING RINGEMENT WHEN EQUIVALENCY IS AT JE PROPERLY PARALLELS THE ROLE OF GES IN CONNECTION WITH LITERAL RINGEMENT
	A.	Equivalency, Like Literal Infringement, Is A Two-step Inquiry One Legal Step And One Factual Step
	B.	Case-Specific Instructions On Function/Way/Result Must Be Required16
Ш.	INS	AMORPHOUS, SEPARATE TEST FOR UBSTANTIALITY OF DIFFERENCES IS THER REQUIRED NOR APPROPRIATE21
	A.	The Amorphous Substantiality Test Was Not Mandated By This Court In Graver21
	B.	An Amorphous, Separate Insubstantiality Test That Contributes To Confusion and Uncertainty Is The Legacy Of The Federal Circuit's Incorrect View Of The Doctrine of Equivalents
CON	ICLUS	SION 28

# TABLE OF AUTHORITIES

# CASES

Autogiro Co. of America v. United States, 384 F.2d 391 (Ct. Cl. 1967)	.6
Burroughs Wellcome Co. v. Barr Laboratories, Inc., 40 F.3d 1223 (Fed. Cir. 1994), cert. denied, 116 S. Ct. 771 (1996)	.6
Coupe v. Royer, 155 U.S. 565 (1895)11, 14, 15, 16, 18,	19
Graver Tank & Manufacturing Co. v. Linde Air Products Co., 339 U.S. 605 (1950)passi	im
Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422 (Fed. Cir. 1989)19,	20
Machine Co. v. Murphy, 97 U.S. 120 (1877)	7
Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991), cert. denied, 504 U.S. 974 (1992)	20
Markman v. Westview Instruments, Inc., 52 F.3d 967 (Fed. Cir.), cert. granted, 116 S. Ct. 40 (1995)	16
Roton Barrier, Inc. v. The Stanley Works, 37 U.S.P.Q.2d (BNA) 1816 (Fed. Cir. 1996)	25
Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929)	25
Towne v. Eisner, 245 U.S. 418 (1918)	6

Winans v. Denmead, 56 U.S. (15 How.) 330 (1853)passim
Zygo Corp. v. Wyko Corp., No. 94-1445, 1996 U.S. App. LEXIS 5614 (Fed. Cir. Mar. 26, 1996)25
CONSTITUTION AND STATUTES
U.S. CONST. art. I, § 8, cl. 8
35 U.S.C. § 112 (1994)
Patent Act of 1836, ch. 357, § 6, 5 Stat. 117 (1836)
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#### IN THE

# Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC., Petitioner,

V

### HILTON DAVIS CHEMICAL CO.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR INFORMATION TECHNOLOGY INDUSTRY COUNCIL AND INTEL CORPORATION AS AMICI CURIAE IN SUPPORT OF PETITIONER

#### INTEREST OF AMICI CURIAE

With the consent of the parties, amici curiae the Information Technology Industry Council (ITI) and Intel Corporation (Intel) submit this brief in support of petitioner Warner-Jenkinson Company, Inc.<sup>1</sup> ITI is an association that represents leading United States providers of information technology products and services. Its members employ more than one million people in the United States and have aggregate annual revenues in excess of \$350 billion. ITI's mission

Letters reflecting written consent of the parties to the submission of this brief have been filed with the Clerk of Court.

includes advocacy of policies that protect intellectual property. Intel, a manufacturer of semiconductors and related products, is a member of ITI.

As providers of information technology products and services, ITI members have acquired substantial patent litigation experience which affords them an impartial vision of the central issue in this case: the role of the doctrine of equivalents in patent infringement litigation. Having faced that issue both as patentee and as accused infringer, ITI members are intimately familiar with the pressing practical need for a clear and correct understanding of a doctrine that has immense significance to inventors, corporate and financial decisionmakers, and counsel who advise them.

The doctrine of equivalents has assumed a pivotal role in delineating a measure of patent protection beyond that specified by the literal words of patent claims. It is, therefore, imperative that the doctrine be defined and implemented to preserve a proper balance between the rights of patentees to the fruits of their inventions and the rights of business rivals to operate outside of literal patent claim language. It is also imperative that the doctrine be given a clear, precise definition to avoid unwarranted transaction costs and litigation. Only then will consumers be assured the optimum benefits of innovation and competition in a free marketplace. If the balance is struck incorrectly - or is implemented erratically -- innovation, technology and the economy will all suffer. Amici have a vital interest in avoiding that unfortunate result.

#### SUMMARY OF ARGUMENT

The Federal Circuit's current perspective on the doctrine of equivalents is fundamentally wrong—whether viewed through the eyes of a patentee or through the eyes of an accused infringer. The decision below introduces needless confusion into the substantive standard for applying the doctrine of equivalents. To prevent equivalency determinations from producing random or haphazard results, the governing legal standard must be correctly defined and trial judges must take a more active role in implementing that standard than the bystander role assigned them under the decision below. The splintered views expressed in the multiple opinions of the Federal Circuit in this case fail to provide clear, correct or adequate guidance for future cases.

Under the decision below, uncertainty in the resolution of equivalency questions will frustrate and impede investment decisions by technology companies. The doctrine of equivalents affects a host of significant business decisions, including: whether to launch products into or remove them from commerce; whether or how to alter designs of products, processes, and machines; and whether to seek or grant licenses. Those decisions influence not only enormous financial commitments but also momentous changes in investment directions.

For years prior to the decision below, the function/way/result test previously enunciated by this Court was well settled as the standard for determining equivalency. That function/way/result test can continue to provide a workable framework for equivalency analyses. It is, by a wide margin,

preferable to the formless standard constructed by a majority of the Federal Circuit in this case: a freeform assessment of the "substantiality" of differences between the alleged infringement and what is claimed in the asserted patent. The amorphous analysis mandated by the decision below is exacerbated by the Federal Circuit's requirement that the *entire* matter of whether there is infringement under the doctrine of equivalents is a fact question to be decided by the jury without clear guidance as to its meaning. See Pet. App. 17a.

By departing from established precedent, the decision below greatly and unnecessarily increases uncertainty in equivalency determinations. Reaffirmation of this Court's precedent on the substantive standard and guidance on its application by judges and juries is essential. In short, this Court should hold that the tripartite function/way/result test is the standard by which the doctrine of equivalents is to be applied. In any particular case, the test for admissibility of evidence should be whether the evidence is relevant to one of the three prongs (function, way or result).

The Court should also specify that the correct allocation of responsibility between judge and jury under the doctrine of equivalents includes the same allocation that exists in cases of literal infringement. First, the trial court should decide, as a matter of law, the parameters of function, way and result applicable in the circumstances of each case; this decision is analogous to the court's role in ascertaining the meaning of the words in a patent claim. Then, guided by correct instructions, the jury may resolve the factual question whether the allegedly infringing product falls

within those applicable parameters defined by the court. Under this analytical framework and decisionmaking mechanism, the dual objectives of innovation and competition can advance in tandem as intended by the framers of the Constitution and the drafters of the patent law. And they can advance rationally and predictably, based on sound application of policy, not chance.

#### **ARGUMENT**

I. THE DOCTRINE OF EQUIVALENTS SHOULD BE CORRECTLY DEFINED IN ORDER TO FULFILL ITS PIVOTAL ROLE IN PATENT INFRINGEMENT LITIGATION

As a general proposition, infringement is determined by reference to the literal language of patent claims. Those claims are to be well drafted to "particularly point[] out and distinctly" state "the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 (1994). The claim language serves a vital notice function by differentiating what is foreclosed from what is not. When an accused infringement falls clearly within the claim language, as properly interpreted, liability is established and that ends the inquiry. See Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 607 (1950). Informed business decisions, in the information technology field as elsewhere, are based on the paramount significance the law attaches to the notice provided by the claim language.

The doctrine of equivalents is an exception (albeit an important one) to the otherwise dispositive

import of the literal language of patent claims. This Court has long recognized that wooden adherence to the confines of literal infringement could pose a genuine risk that an inventor would forfeit the fruits of a meritorious technological advance because of inevitable limitations of language.<sup>2</sup> Therefore, the doctrine of equivalents "'temper[s] unsparing logic'" otherwise associated with treating the literal claim language as the sole measure of infringement. See Graver Tank, 339 U.S. at 608 (quoting Sanitary Refrig. Co. v. Winters, 280 U.S. 30, 42 (1929)).

Consistent with this Court's opinions, the doctrine had devolved to a well-established standard: measurement of the identity between what is claimed and what allegedly infringes under a tripartite test that focuses on substantial identity of function, way and result. When what is claimed and what is accused perform substantially the same function in substantially the same way to accomplish substantially the same result, the law treats them as the same even though

they differ in name, form or shape. Graver Tank, 339 U.S. at 608; Sanitary Refrig., 280 U.S. at 42; Machine Co. v. Murphy, 97 U.S. 120, 125 (1877). The longevity and stability of that test is attributable to its reliance on familiar and objective considerations. When coupled with adequate guidance to the fact finder in applying this standard to a particular dispute, the function/way/result test provides an indispensable level of certainty and predictability to both patentholders and their competitors when they make investment and marketing assessments of the scope of patents.

That predictability was impaired in multiple ways by the decision below. First, the Federal Circuit announced that the tripartite function/way/result test is no longer the measure of equivalency. Instead, the Federal Circuit adopted a different and less stable test.

Under the decision below, the tripartite test has been subsumed into or replaced by an amorphous inquiry that asks, with no analytical point of focus, whether or not the differences between the patent claim and the alleged infringement are "substantial." The role of the traditional tripartite test within this undefined analytical matrix is far from clear. No longer the established standard for measuring equivalency, the function/way/result formula may be all or part of the "substantiality" determination. Pet. App. 10a. Exactly how much a part of that determination is at best vague and is not articulated with either clarity or precision in the decision below. That lack of guidance has already been reflected in subsequent decisions of the Federal Court. For example, a panel of that court recently treated the formless "substantiality" analysis as having so marginalized the old test that an

Inventions are conceptual and not merely physical embodiments amenable to determination of precise physical boundaries or verbal description. "Conception is the touchstone of inventorship, the completion of the mental part of invention." Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1227-28 (Fed. Cir. 1994), cert. denied, 116 S. Ct. 771 (1996). And words are at best imperfect tools for communicating concepts. "A word is not a crystal, transparent and unchanged, it is the skin of a living thought and may vary greatly in color and content according to the circumstances and the time in which it is used." Towne v. Eisner, 245 U.S. 418, 425 (1918) (Holmes, J.) Furthermore, "[t]he lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much shadow encumbers the reality." Autogiro Co. of America v. United States, 384 F.2d 391, 396 (Ct. Cl. 1967).

undisturbed finding of triple identity (which previously would have been dispositive on the issue of infringement) was trumped by evidence that the accused infringer intended to design around the patent—thereby making the product of that design effort a noninfringement. See Roton Barrier, Inc. v. The Stanley Works, 37 U.S.P.Q.2d (BNA) 1816, 1827 (Fed. Cir. 1996) (applying Hilton Davis).3

Moreover, in concluding that identity in function/way/result might not be sufficient to establish equivalency, the decision below fails to offer any clear explanation of what is to be the standard for proving infringement under the doctrine of equivalents. The elements of the tripartite test are apparently now to be balanced in some nebulous way against other evidence supposedly bearing on the "substantiality" of the differences. But the Federal Circuit has provided no guidance on how to proceed. Litigants and lower courts have been handed a puzzle: how to construct, calibrate and decipher the balancing scales. See Pet. App. 10a. Increased uncertainty is the inevitable consequence.

A further aspect of the decision below that will also spawn greater uncertainty is the diminished role of the trial judge. This Court's precedents envision and prescribe a significant role for the judge in shaping issues for the fact finder to resolve. According to the Federal Circuit, however, the *entire* question whether there is infringement under the doctrine of equivalents is a fact issue for the jury. Pet. App. 17a. In the view of the Federal Circuit, there are no attendant legal issues within the province of the court. For example, there is no requirement for trial judges to determine or to explain to jurors the substance of the "function," "way," or "result" to be scrutinized in deciding whether differences are "substantial."

Under this regime, juries are destined to be cast adrift on uncharted waters with no maps and no navigational tools. That environment greatly increases the likelihood that infringement under the doctrine of equivalents will be determined on the basis of random

The discussion of the doctrine of equivalents in *Roton Barrier* is rather opaque. Although the Federal Circuit did not expressly overturn the finding of triple identity, some may view the court's analysis as having done so implicitly. In either event, *Roton Barrier* illustrates the quagmire surrounding the tripartite test. Absent a definite vision whether that test is necessary, sufficient, or merely incidental to the issue of infringement, further cryptic decisions like *Roton Barrier* will inevitably follow.

Whether juries *must* be given the responsibility to apply the legal standard for equivalence to the particular facts is a separate question. Four dissenting judges below suggested that unlike literal applicability of patent claims to accused infringements (uniformly acknowledged to be a jury question), no component whatsoever of equivalency disputes is required to be submitted to juries because the doctrine of equivalents is entirely "equitable." Pet. App. 65a-66a (Plager, J., dissenting). Amici take no position on that matter, except to urge that if equitable discretion is deemed by this Court to be any part of the calculus, the need for more (not less) certainty dictates setting specific limits on its exercise, beyond a general commission to "do equity." See id.

and subjective considerations. Effective judicial review of those determinations would be a virtual impossibility.<sup>5</sup> These circumstances, which no business should be forced to face, would be especially injurious to sound investment decisionmaking in the technology industry.

In direct contrast to the decision below, which essentially eliminates whatever certainty and predictability the established tripartite test can afford, prior decisions of this Court reflect a more discerning approach to the doctrine of equivalents. This Court has neither held nor suggested that the triple identity test be abandoned in favor of a formless consideration of substantiality. Equally as important, the decisions of this Court do not relegate trial judges to the role of bystander when equivalency is at issue in jury trials.

Rather, this Court has enunciated and consistently applied the function/way/result test of equivalency.<sup>6</sup> See, e.g., Winans v. Denmead, 56 U.S. (15

How.) 330, 338-44 (1853); Coupe v. Royer, 155 U.S. 565, 579-80 (1895); Sanitary Refrig., 280 U.S. at 42-43; Graver Tank, 339 U.S. at 608-09. And, in jury trials, this Court has placed squarely on the shoulders of trial judges the obligation to decide (as a matter of law) and to instruct the jury on the appropriate parameters of function, way and result. Winans, 56 U.S. (15 How.) at 338; Coupe, 155 U.S. at 579-80. When correctly instructed, juries can then apply those parameters to the alleged infringement and thereby determine whether the fact of equivalency has been established.

- II. THE ROLE OF JUDGES IN DETERMINING INFRINGEMENT WHEN EQUIVALENCY IS AT ISSUE PROPERLY PARALLELS THE ROLE OF JUDGES IN CONNECTION WITH LITERAL INFRINGEMENT
  - A. Equivalency, Like Literal Infringement, Is A Two-step Inquiry -- One Legal Step And One Factual Step

The correct allocation of responsibility between judge and jury under the doctrine of equivalents should replicate the allocation that exists in literal infringement cases. It is a well-settled proposition that the literal infringement inquiry is a two-step process. First, the court determines what the words of the claim mean — a

In dissent, Judge Plager stated that the majority below has come up with a recipe "in which familiar ingredients are to be mixed" differently, but "[t]he mixing is still to be done in the dark, by the multiple hands of a jury under minimal instruction," and those charged with review of the outcome "will remain [ ] blinded." Pet. App. 52a.

It has been suggested that function/way/result is not always an appropriate equivalency test. For example, it might be particularly inapplicable when considering patents on new chemical compounds. See Pet. App. 73a (Lourie, J., dissenting). However, neither that perceived deficiency nor the recognition that determinations of equivalency ought not be a "prisoner of a formula," Graver Tank, 339 U.S. at 609, justifies the amorphous "substantiality" test announced by the Federal Circuit. Permitted departures from the function/way/result test should not be freeform; they need to be both justified and subject to defined

limits. For example, in chemical compound cases, equivalency can be measured by a well-defined test of substantial similarity of structure and properties (rather than function/way/result). To be found equivalent, accused compounds would have to be structurally similar (e.g., homologs, analogs, isomers) and would have to share substantially similar properties despite relocations or substitutions of substituents, moieties or functional groups.

matter of law. Next, the trier of fact determines whether the words of the claim, as so construed, apply to the allegedly infringing product. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir.) (en banc), cert. granted, 116 S. Ct. 40 (1995). In bench trials, both tasks are performed by the court. In jury trials, only the factfinding role is assigned to the jury.

The inquiry into infringement under the doctrine of equivalents should involve a similar two-step process. First, the court should determine the legal parameters of function/way/result that constrain the assessment of substantial identity. Then, the factfinder must determine whether those delineated parameters apply to the allegedly infringing product. In collapsing this two-step process into a single inquiry that is entirely in the hands of the jury, the Federal Circuit departed from this Court's seminal decision in Winans. See Graver Tank, 339 U.S. at 608.

The patent in Winans involved car bodies for transporting coal. Binding of the contents during discharge was a problem the invention sought to solve. The way it achieved its objective was to employ a circular car body. The function of the circular form was to distribute the load pressure uniformly outward. As a result, complete discharge occurred upon removal of the bottom. Winans, 56 U.S. (15 How.) at 339 ("by reason of the circular form of the car body, the pressure of the load outwards was equal in every direction," facilitating "the complete discharge of the load through the aperture, when the bottom was removed"). There was no literal infringement in Winans because the car body of the allegedly infringing device was octagonal, not circular.

This Court held that the absence of literal infringement did not preclude all further inquiry. Unless "form and substance are inseparable," both "courts and juries" must "look through the form for the substance of the invention;" and where "found, ... it is not a defence, that ... [an infringement] is embodied in a form not described, and in terms claimed by the patentee." *Id.* at 343.

That judicial "look through the form for the substance" is today known as the doctrine of equivalents. From its inception in Winans, equivalency was a two-component inquiry, one part law and one part fact. The law question "ascertained what is the structure described, the mode of operation it embodies, and the practical result attained." Id. at 340. After that, "the next inquiry is, does the specification of claim[7] cover the mode of operation by which this result is effected?" Id.

That second inquiry is factual, and it is to be resolved in jury cases only upon instructions from the court that circumscribe the appropriate function/way/result parameters. Winans dictates and is wholly compatible with this approach. This Court there addressed first the governing function/way/result parameters, and then described as the jury's sole function the determination whether "in point of fact" the accused car bodies were substantially the same in "the sense above explained." Id. at 344. The Court elaborated (id. at 344):

The statute then in force required a patentee to "particularly specify and point out the part, improvement or combination which he claims as his own invention or discovery." Patent Act of 1836, ch. 357, § 6, 5 Stat. 117, 119 (1836).

In our judgment, the only answer that can be given to these questions is, that it must be so near to a true circle as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention. It is not necessary that the defendant's cars should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be precisely the same in degree. It must be the same in kind, and effected by the employment of his mode of operation in substance. Whether, in point of fact, the defendant's cars did copy[8] the plaintiff's invention, in the sense above explained, is a question for the jury, and the court below erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative.

The approach this Court employed in Winans was jettisoned by the Federal Circuit in the decision below. That departure from precedent cannot be justified or rationalized. It is no explanation to say that amendments to the patent statutes warrant abandonment of the approach employed in Winans. This Court reiterated and endorsed the same two-step approach in Coupe v. Royer, 155 U.S. 565 (1895), a doctrine of equivalents case decided under a statute enacted after the statute at issue in Winans. 9 Moreover,

Coupe approved the approach set forth in Robinson on Patents, an 1890 Treatise that urged trial judges to "define[] the patented invention as *indicated* by the language of the claims," (not as *limited* by the claims), and for the jury to "judge whether the invention so defined covers" what is accused. 155 U.S. at 579 (emphasis added). In short, the two-step inquiry prescribed in Winans was recapitulated.

Coupe also adhered to the approach in Winans in additional respects. When discussing appropriate jury instructions, this Court specifically referred to "instructions as to the nature and scope of the plaintiff's patent", id. at 580, which there meant accounting for the recurring mention of a vertical shaft in the claims and for "differences . . . arising out of difference in position," as well as other differences. Id. at 576, 580. In other words, a court first fixes the parameters of equivalency and only then is the jury to determine "the question of infringement." Id. at 579-80. Thus, Coupe

inquiry is not productive because the doctrine of equivalents was part of the system throughout the transition. The outcome in this case should therefore not be mired in an analysis of changes in statutory language and incomplete anecdotal references to prior practices. Under the Act of 1870, the claiming requirement placed on a patentee was that he shall "particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery." Patent Act of 1870, ch. 230, § 26, 16 Stat. 198, 201 (1870) (emphasis added). Notwithstanding the somewhat different language in the prior statute, the doctrine of equivalents survived. The current statute also calls for "particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 (1994) (emphasis added). The inclusion in the current statute of language virtually identical to the 1870 language hardly signals the demise or alteration of the doctrine of equivalents.

<sup>8</sup> The word "copy" was used there not in any pejorative sense, but in the sense of "duplicate."

It is unnecessary and perhaps impossible to pin down with any degree of certainty when the complete transition from central to peripheral claiming occurred in our patent system. See Pet. App. 36a n.2 (Newman, J., dissenting). In the final analysis, that

confirms that this Court's two-step approach is applicable to determinations of equivalency.

When the pedigree of the two-step law/fact inquiry is properly understood, it is clear that the Federal Circuit has no basis for placing unwarranted reliance on this Court's later statement that "'[a] finding of equivalence is a determination of fact." Pet. App. 14a (quoting Graver Tank, 339 U.S. at 609). Nothing in Graver Tank transforms the trial judge's responsibility to fix the legal parameters of function/way/result into a purely factual inquiry. Indeed, the quoted passage from Graver is entirely in accord with Winans and Coupe, both of which recognize that the only question for the jury is whether the evidence shows that the parameters as set by a judge in fact embrace the allegedly infringing product. By failing to adhere to that allocation of responsibility between judge and jury, the Federal Circuit erred.

# B. Case-Specific Instructions On Function/Way/Result Must Be Required

In a literal infringement case, a jury cannot be expected to determine whether the words of the claim in fact apply to the allegedly infringing product unless correctly instructed on the law. See Markman, 522 F.3d at 988-89.10 Likewise, a jury cannot be expected to

determine whether the parameters of function/way/result in fact apply to the allegedly infringing product unless correctly instructed on the law defining those parameters. The trial judge needs to lay out for the jury the substance of the function/way/result parameters that may lawfully be scrutinized.

Judge Plager's dissenting opinion below makes a compelling case that trial judges must be required to give such case-specific instructions on equivalency; and that, in the absence of correct instructions, equivalency determinations will be both uncontrolled and unreviewable. The dissent observed (Pet. App. 54a-55a):

- "Federal district judges, perhaps understandably, by and large make little pretense of liking these patent infringement cases, and are quite content to give them, and all the issues in them, to juries to decide."
- "The cases typically come ... on appeal with nothing more than a general verdict finding infringement. There is no explanation by the jury of the rationale behind their verdict, if any exists."
- "[Appellate] review ... assume[s] that the jury understood the technology, understood the law

At the time this brief is filed, Markman remains sub judice and its disposition unknown. In Markman, this Court may or may not ultimately decide that, even though the literal meaning of words in the claim is a matter of law, there are some underlying fact issues for the jury. Even if this Court decides in Markman that some underlying fact issues must go to the jury, juries would need correct instructions to apply a particular meaning to claim language depending on their finding of particular facts

commended to them for resolution. Likewise, in some equivalency cases, when the legal determination of the appropriate function/way/result parameters depends on underlying factual disputes, juries should be instructed to apply particular parameters depending on their finding of particular facts commended to them for resolution.

of patents and the policies that underlie it, understood the function, way, and result of the matter, and arrived at a considered decision."

- "It is enough to sustain a jury verdict of infringement by equivalents if the trial court's instructions are without prejudicial error (oftentimes this translates into the less said the better), and if there is any substantial evidence in the record which the hypothetical reasonable juror could have believed, and so believing, arrived at the verdict."
- "A plaintiff must have a virtually impossible case, or incompetent counsel, to fail to have something in the record which can be argued is substantial enough ...."
- "[T]he reality is that the doctrine of equivalents is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose."

That untoward result should be foreclosed as it will contribute neither to certainty nor to the progress of the useful arts, which is the constitutional basis of the patent system. U.S. CONST. art. I, § 8, cl. 8.

What will contribute both to the useful arts and to necessary certainty in infringement cases is a return to the equivalency determinations mandated by this Court in Winans and Coupe. When assigning to the jury the role of determining whether an accused infringer used a patentee's invention "in the sense above explained," this Court in Winans clearly called for an explanation to the jury of the specific function/way/result parameters to be considered by

them. 56 U.S. (15 How.) at 344. When requiring the submission of an equivalency question to the jury "with proper instructions as to the nature and scope of the plaintiff's patent as hereinbefore defined," 155 U.S. at 580, this Court in Coupe was likewise calling for an explanation to the jury of the specific function/way/result parameters to be considered by them.

Before that approach was abandoned in the decision below, other Federal Circuit decisions more closely followed this Court's precedent. In Lear Siegler, Inc. v. Sealy Mattress Co., 873 F.2d 1422 (Fed. Cir. 1989), a jury had found that the patent-in-suit was infringed under the doctrine of equivalents. The court of appeals reversed because the plaintiff had not produced evidence at trial showing the function, way and result of the invention and the accused products. As the court explained (id. at 1425-1426):

[a]bsent the proper Graver Tank context, i.e., a showing of how plaintiff compares the function, means, and result of its claimed invention with those of the accused device, a jury is more or less put to sea without guiding charts when called upon to determine an infringement under the doctrine. While we do not doubt the ability of a jury to decide the factual issue of equivalence, to enable the jury to use its ability, ... the three Graver Tank elements must be presented in the form of particularized testimony and linking argument.

The court expanded on its ruling (id. at 1427) by stating:

[I]f a jury is to rationally find all three elements of equivalence, it must be told what evidence establishes the equivalence of the claimed and accused devices as to each element. Otherwise, there is too much risk [and] the jury will simply compare the two inventions as to overall similarity, in violation of *Graver Tank*.

Plainly, the court recognized the importance of fully informing juries on the pertinent function/way/result of both the claimed invention and the accused product before they could determine equivalency.

The Federal Circuit reiterated that theme in Malta v. Schulmerich Carillons, Inc., 952 F.2d 1320 (Fed. Cir. 1991), cert. denied, 504 U.S. 974 (1992). There, a jury had found the patent-in-suit to be infringed by reason of equivalency. The Federal Circuit affirmed the entry of judgment notwithstanding the verdict, stating that "what is clearly lacking in that testimony is a sufficient explanation of both why the overall function, way, and result of the accused device are substantially the same as those of the claimed device and why the plastic/slotted, plastic/felt arrangement is the equivalent of the claimed buttons limitation." Id. at 1327. Thus, in Malta, the Federal Circuit also had a clear understanding that infringement under the doctrine of equivalents could not be determined by juries in the absence of a particularized explanation of the proper function/way/result parameters to be considered.

In both Lear Siegler and Malta, the Federal Circuit "signalled the need for a more disciplined analysis in"

jury trials of equivalency cases. Pet. App. 68a n.8 (Plager, J., dissenting). Yet, despite these prior signals, and despite this Court's precedent which points to a requirement for case-specific instructions by trial judges on the parameters of the three prongs of the tripartite test, and despite the adverse impact on reliability, the Federal Circuit has opted to send the entirety of all equivalency questions to juries with virtually no guidance.

In the information technology field as elsewhere, the reliability of legal advice on equivalency questions can be only as good as the system for resolving doctrine of equivalents disputes. This Court previously established a system that tends to enhance such reliability by dividing the equivalency issue into legal and factual components, and by providing for case-specific jury instructions on the legally applicable function/way/result parameters before the factual component is submitted to juries. That satisfactory approach is well-established and offers stability. It has not been altered by Congress and the decision below offers no legal or practical justification for its departure. The Federal Circuit's rejection of that established approach should be reversed.

# III. AN AMORPHOUS, SEPARATE TEST FOR INSUBSTANTIALITY OF DIFFERENCES IS NEITHER REQUIRED NOR APPROPRIATE

# A. The Amorphous Substantiality Test Was Not Mandated By This Court In Graver

The decision below further undermines certainty and predictability by abandoning the dispositive role of

the tripartite test without providing a coherent replacement. Prior to the Federal Circuit's en banc decision in this case, inventors, corporate and financial decisionmakers and their counsel could base assessments on the scope of patent protection on the tripartite function/way/result test. That test was firmly established and long recognized as the sole standard for the patent protection afforded by the doctrine of equivalents. After the decision below, it is far from clear what role the function/way/result inquiry now plays. Equally unclear are the parameters and standards of the newly-created inquiry.

The Federal Circuit's erroneous departure from precedent is plainly revealed in its opinion. At its core, the error in the decision below derives from a misreading of *Graver Tank's* comment that the substitution of manganese for magnesium was an insubstantial change "under the circumstances." *See Graver Tank*, 339 U.S. at 610. The Federal Circuit transformed that comment into the launching pad for a separate, wholly new and altogether amorphous test of "substantiality." Pet. App. 7a-8a. According to the Federal Circuit's reading of *Graver Tank*:

The Court defined the doctrine of equivalents in terms of the substantiality of the differences between the claimed and accused products or processes. The Supreme Court in *Graver Tank* thus made insubstantial differences the necessary predicate for infringement under the doctrine of equivalents.

Id. at 8a. But the Federal Circuit paid no attention to this Court's specific reference in *Graver Tank* to the "circumstances" of that case. See 339 U.S. at 609. Nor

did the court of appeals advert to the earlier discussion in *Graver Tank* of those very circumstances in the context of a function/way/result analysis of equivalency. Those omissions are significant. When *Graver Tank* is correctly read in its entirety, with those omissions restored, there is no room to doubt that this Court required substantiality to be measured by the tripartite test. *See id.* at 608-609.

Graver Tank focused directly on the tripartite test. See id. at 608. It was precisely in connection with that very test that the Court referred to "the wholesome realism" of the doctrine of equivalents. Id. This Court also concentrated on the established tripartite test in analyzing the particular equivalency issues involved in Graver Tank. See id. at 610. Similarly, the Court evaluated "insubstantial change" in the context of function/way/result, not separately and not as an umbrella test. See id. at 610-11. All evidence the Court suggested as relevant to weighing substantiality bore directly on the tripartite test. See id. at 609-11.

It is, therefore, not surprising that the Federal Circuit found and cited no direct support in *Graver Tank* for a separate, umbrella test for weighing the substantiality of differences between the patented and accused products. The standard conjured up in the decision below has no roots in *Graver Tank*. *Graver Tank* was all about satisfaction of the triple test — no more, no less.

B. An Amorphous, Separate Insubstantiality Test That Contributes To Confusion and Uncertainty Is The Legacy Of The Federal Circuit's Incorrect View Of The Doctrine of Equivalents

The decision below also shrouds in mystery the continuing status of the function/way/result test in the new "substantiality" inquiry. The first question set forth in the Federal Circuit's opinion was whether something more than satisfaction of the tripartite test is required to prove equivalency. Pet. App. 5a. But the only answer the Federal Circuit could muster was "maybe" id. at 17a — leaving considerable confusion in its wake.

For example, a panel of the Federal Circuit has already applied Hilton Davis to reverse an equivalency determination where the district court found that the tripartite identity test was met and where that finding was left undisturbed on appeal. See Roton Barrier, Inc. v. The Stanley Works, 37 U.S.P.Q.2d (BNA) at 1827-28. The stated basis for the Federal Circuit's decision in Roton was evidence that the alleged infringer intended to design around the patent. Id. at 1827 Relying on the proposition from Hilton Davis that such evidence can support an inference of substantiality of difference, the Federal Circuit proceeded to draw that inference on appeal even though no such inference had been drawn by the finder of fact in the district court. Id. In short, the court of appeals in Roton viewed the substantiality of differences between what was claimed and what was accused to be an established fact -- notwithstanding the trial findings of insubstantial differences in function, way, and result.

Adding to the confusion, a concurring opinion in Roton offered a further novel basis for the judgment. The concurring opinion observed that the accused infringer had a patent of its own, and elevated that patent to the status of controlling evidence of substantiality of the differences between what was claimed by plaintiff and what was being done by the defendant. Id. at 1828 (Nies, J., concurring). Not only is that conclusion contrary to this Court's holding in Sanitary Refrig. Co. v. Winters, 280 U.S. 30, 43 (1929), but it also places the Patent and Trademark Office, not a trial judge and not a jury, in the pivotal position of decisionmaker on the question of substantiality. 13

Neither the opinions below in this case nor the more recent opinions in *Roton* clearly delineate the factors of the amorphous "substantiality" test, the limits (if any) of those factors, or how such factors are to be applied. Equally as important, the Federal Circuit has failed to explain where the function/way/result test (the standard amenable to analysis at the time business decisions are made) now stands. There is no way of

This same view was expressed in a later Federal Circuit panel decision. See Zygo Corp. v. Wyko Corp., No. 94-1445, 1996 U.S. App. LEXIS 5614, at \*20 - \*21 (Fed. Cir. Mar. 26, 1996).

In Sanitary Refrigerator, where the tripartite test was factually met, this Court held that factual finding to be "controlling", and infringement could not be avoided "by any presumptive validity that may attach" to the accused infringer's own patent. 280 U.S. at 43.

That approach will end up yielding protracted sideshows over validity of an accused infringer's patent. Failure to produce such a sideshow would be at the risk that *ex parte* Patent and Trademark Office rulings in which one litigant had no participation will control the outcome of the litigation.

knowing when other so-called evidence of substantiality or insubstantiality will or will not trump evidence that in the past would have been dispositive under the function/way/result test. Decisionmakers in industry and finance are now without judicial guidance on how such "other evidence" may be weighed against the function/way/result test. When business decisions made in this vacuum are tested in court, the litigants, judges and juries will lack objective and predictable criteria for resolving the confusion.

For example, the decision below notes that evidence of "copying" can support an inference that differences are "insubstantial" but evidence of "designing around" can support an inference that the same differences are "substantial." Pet. App. 11a, 12a, 13a. The critical flaw of this formulation is that "copying" is not necessarily distinguishable from "designing around." These activities exist on a spectrum where their separation "is often a matter of degree." Pet. App. 76a (Lourie, J., dissenting). "Both involve focusing on the patented invention," and discerning copying from designing around depends "upon whether one succeeds or not in getting far enough away from the claims .... Both ... attempt to make as little change ... as possible to retain or improve on the properties of the invention, while avoiding infringement." Id.

It is, therefore, futile to expect that a jury will accurately analyze the copying/designing-around spectrum if the court fails to provide spectrograph equipment. It is also incorrect to assume that the choice between "copying" and "designing around" is an all or nothing proposition. An alleged infringer might "copy" a result, while intentionally "designing around"

the way it is accomplished. Similarly, it is also wrong to assume (as does the majority below) that independent development is necessarily relevant only to rebut charges of copying. See Pet. App. 11a-14a. In his dissenting opinion, Judge Lourie aptly observed that "[d]istance from ... a patent ... and the history and purpose of one's product development ... are ... not synonymous ...." Id. at 76a.

Whether, when and how factors such as "copying," "designing around," or "independent development" should be considered in resolving equivalency disputes is clearly problematic. 14 The lack of guidance can only spawn further uncertainty and instability.

In order to restore stability and enhance certainty in the application of the doctrine of equivalents, this Court should reverse and rectify at least two crucial errors in the Federal Circuit's en banc decision in this case. First, the amorphous "substantiality" test should be rejected and the function/way/result test previously adopted by this Court should be reinstated. Next, this Court should explain with clarity and precision what "other evidence" of "substantiality" or "insubstantiality" may be considered, and clarify that such evidence is considered only when it can be shown to be logically

This brief takes no position on such questions except to urge this Court to decide conclusively whether these factors may be considered in applying the doctrine of equivalents. If the Court holds that these factors are permissible considerations, it should then provide specific guidance on when and how these factors are to be weighed in the analysis.

related to one or more of the prongs of the function/way/result test.

#### CONCLUSION

The judgment of the Federal Circuit should be reversed.

Respectfully submitted.

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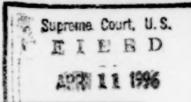
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No. 95-728



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# Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner.

V.

HILTON DAVIS CHEMICAL Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE
MCI TELECOMMUNICATIONS CORPORATION
IN SUPPORT OF PETITIONER

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# TABLE OF CONTENTS

		Page
TABLE O	F AUTHORITIES	ii
INTERES	T OF AMICUS CURIAE	1
	ICTION AND SUMMARY OF ARGU-	2
ARGUME	NT	3
OF WI	E DECISION BELOW MISCONSTRUES E MODERN ROLE OF THE DOCTRINE EQUIVALENTS AND IS INCONSISTENT TH THE TERMS AND PURPOSES OF THE TENT STATUTE	3
	A Broad and Vague Doctrine of Equivalents Has No Legitimate Role in Modern Patent Law	3
В.	A Broad and Vague Doctrine of Equivalents Threatens to Undermine the Goals of the Patent Act	8
II. A EQ TH	CAREFULLY CABINED DOCTRINE OF UIVALENTS COULD SERVE RATHER AN FRUSTRATE THE PURPOSES AND ERATION OF THE PATENT STATUTE	12
Α.	A Modern Doctrine of Equivalents	12
В.	Rules of Application	13
	1. Invention	13
	2. Enablement	17
	3. Patent Prosecution Disclaimers	18
EQ	PLICATION OF THE DOCTRINE OF UIVALENTS IS PROPERLY A QUESTION	
FO	R THE JUDGE, NOT THE JURY	21
CONCLU	STON	04

#### TABLE OF AUTHORITIES Page CASES American Home Prods. Corp. v. Johnson & Johnson, 25 U.S.P.Q.2d (BNA) 1954 (Fed. Cir. 22 1992) ..... Ball & Socket Fastener Co. v. Kraetzer, 150 U.S. 111 (1893) ..... Bonito Boats, Inc. v. Thunder Craft Boats, Inc., Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537 (1898) ..... Concept Design Elecs. & Mfg. v. Duplitronics, Inc., 34 U.S.P.Q.2d (BNA) 1789 (Fed. Cir. 1995).... 23Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605 (1950) .....passim I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429 (1926) ..... Knapp v. Morss, 150 U.S. 221 (1893) Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861 (Fed. Cir. 1985) ..... London v. Carson Pirie Scott & Co., 946 F.2d 1584 Morley Sewing-Machine Co. v. Lancaster, 129 U.S. 263 (1889) ..... Palumbo v. Don-Joy Co., 762 F.2d 969 (Fed. Cir. 1985) ..... Paragon Podiatry Lab, Inc. v. KLM Labs., Inc., 984 F.2d 1182 (Fed. Cir. 1993) ..... Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528 (Fed. Cir. 1987) ..... Precision Instrument Mfg. Co. v. Automotive Maintenance Mach., 324 U.S. 806 (1945) Read Corp. v. Portec, Inc., 970 F.2d 816 (Fed. 13 Cir. 1992) ..... Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211 (1940) ..... Smith v. Magic City Kennel Club, Inc., 282 U.S.

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TABLE OF AUTHORITIES—Continued	
	Page
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(1986)	5
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TABLE OF AUTHORITIES—Continued	
Andreas And State	Page
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Legal F. 471	9
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ysis of the Scope of the Doctrine of Equivalents, 7 Harv. J. of L. & Tech. 281 (1994)	10
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emplar, 5 Harv. J. of L. & Tech. 31 (1991)	17
Thomas Landry, Certainty and Discretion in Pat- ent Law: The On Sale Bar, the Doctrine of	
Equivalents, and Judicial Power in the Federal Circuit, 67 S. Cal. L. Rev. 1151 (1994)	22
3 Lipscomb's Walker on Patents (1985)	5
Robert Meeks, Metaphors of Infringement and Equivalence: The Solution of Our Problems, 2	
J. Intell. Prop. L. 279 (1991)	6
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839 (1990)	10
Judge Paul Michel, The Challenge Ahead: Increas- ing Predictability in Federal Circuit Jurispru-	
dence for the New Century, 43 Am. U. L.	
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Michael Sanzo, Patenting Biotherapeutics, 20 Hofstra L. Rev. 387 (1991)	10
Harold Wegner, Equitable Equivalents: Weighing	10
the Equities to Determine Patent Infringement in Biotechnology and Other Emerging Technolo-	
gies, 18 Rutgers Computer & Technology L.J. 1 (1992)	23
Rafael Zahralddin, The Effect of Broad Patent Scope on the Competitiveness of United States	
Industry, 17 Del. J. Corp. L. 949 (1992)	10

# Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC., Petitioner,

HILTON DAVIS CHEMICAL Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE
MCI TELECOMMUNICATIONS CORPORATION
IN SUPPORT OF PETITIONER

### INTEREST OF AMICUS CURIAE 1

MCI Telecommunications Corporation ("MCI") is a major corporation involved in, or in the process of entering, a variety of high technology fields, including telecommunications, personal communications, and on-line and direct broadcast satellite services. MCI operates in a segment of the economy where technical innovation is essential. From the beginning, MCI has relied on high technology to offer innovative services at lower costs. The expansion of the doctrine of equivalents by the court below threatens strongly competitive and rapidly changing fields such as computers and electronics, on which

<sup>&</sup>lt;sup>1</sup> The parties have consented to the submission of this brief. Their letters of consent have been filed with the Clerk of this Court.

companies such as MCI rely, by injecting increased uncertainty which discourages innovation.

#### INTRODUCTION AND SUMMARY OF ARGUMENT

The doctrine of equivalents, especially as unleashed by the decision below, is no longer needed to foster or enforce the patent bargain and indeed threatens to undermine that bargain and the goals it is intended to further. Nonetheless, there may be a legitimate role for a carefully limited doctrine of equivalents today. As this Court began to suggest in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950), the last occasion on which this Court addressed the question, it may be justifiable to preserve a doctrine of equivalents that operates as an equitable rule, coming into play when there is evidence that the defendant copied the patented invention, making only insubstantial changes designed solely to evade liability for literal infringement. Such a doctrine would be focused on ameliorating the risks created by requiring a patent holder to disclose the invention, while protecting only those inventions actually conceived by the patent holder.

- 1. The decision below frustrates Congress' goals by permitting virtually unguided juries to grant patent holders large and unpredictable penumbras around each claim long after a patent issues. Such a rule plays no legitimate role in the current patent system and generates a level of uncertainty that discourages innovation. Point I,
- 2. A more limited and precisely focused doctrine of equivalents could supplement the statutorily defined patent system without discouraging innovation if it were aimed specifically at providing relief from deliberate copying of a patented invention, when the copyist is sufficiently canny to introduce minor variations that pull the copy just outside the scope of the claims. Point II.A.
- 3. The application of three historically recognized limits would help to ensure that the doctrine does not en-

snare genuine innovations produced by "designing around" a patent, innovations the patent system is intended to encourage. Point II.B.

4. Such a doctrine would be grounded in the courts' equitable jurisdiction. Its application, therefore, would be properly consigned to the judge rather than a jury. Point III.

#### ARGUMENT

I. THE DECISION BELOW MISCONSTRUES THE MODERN ROLE OF THE DOCTRINE OF EQUIVALENTS AND IS INCONSISTENT WITH THE TERMS AND PURPOSES OF THE PATENT STATUTE.

In the Federal Circuit's recent jurisprudence, culminating in the decision below, the doctrine of equivalents has ballooned into a central component of almost every patent case—a rule that substantially expands the monopolies of patent holders, permitting them to claim protection of inventions outside the actual scope of what they invented and claimed in their patent applications. It is time to recognize that such a doctrine is inconsistent with the statutory scheme provided by Congress, and indeed, undermines Congress' goals by discouraging innovation.

#### A. A Broad and Vague Doctrine of Equivalents Has No Legitimate Role in Modern Patent Law.

The so-called doctrine of equivalents has at best a somewhat amorphous and not wholly articulated history. It emerged at a time when patented inventions were typically described solely in detailed specifications and drawings, or in detailed specifications and drawings, or in detailed specifications and drawings supplemented vaguely with such phrases as "or the substantial equivalent." Reflecting that reality, this Court held that the inventions of patent holders also included minor variations of what was specifically described.

In doing so, the Court appeared to be propounding a doctrine relative to properly defining the scope of protection conferred by a patent. In other words, the doctrine of equivalents appears to have initially been an interpretive gloss on the scope of the patent to the effect that patents were understood to reach not only the specific embodiment detailed in the specifications and drawings but also any embodiment employing the particular mode of operation actually invented by the patentee. An early case, Winans v. Denmead, held that a patentee's specifications should not be construed to disclaim embodiments of his invention if they can "fairly be construed" to include them. 56 U.S. (15 How.) 330, 341 (1853).

During the following century, this Court imposed two boundaries on the doctrine. First, the Court held the doctrine mainly applicable to "pioneer" inventions, applying little if at all in construing the scope of improvements to existing machines or processes. See, e.g., Morley Sewing-Machine Co. v. Lancaster, 129 U.S. 263, 273 (1889) (pioneer invention "entitled to a liberal construction of the claims of his patent"); Knapp v. Morss, 150 U.S. 221 (1893) (mere improvement not entitled to broad construction). Second, the Court held that disclaimers during patent prosecution were final; patent holders could not reclaim, by resort to the doctrine of equivalents, the definitions of their inventions they had surrendered in the process of acquiring the patent. See, e.g., I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429, 443-44 (1926) (an element or broader scope voluntarily surrendered to overcome a Patent Office rejection may not be regained through application of the doctrine of equivalents).

Congress also recognized the difficulty created by the specification approach and enacted several amendments to the patent statute which, over time, have developed into the very different claiming system. In current practice, issued patents include not only detailed specifications and drawings of the specific embodiment the inventor has

reduced to practice but also a series of broad and intermediate claims which describe the invention at more abstract levels and thus sweep in other embodiments of the same invention.<sup>2</sup> Indeed, modern claiming practice performs the very function undertaken by the courts in earlier times by means of the doctrine of equivalents. Thus, long before a judge has occasion to construe the terms of a patent, the patent applicant, and his attorneys, are not only permitted, but required, to construe liberally the scope of the detailed specification to include substantial equivalents in order to define the full scope of the invention.<sup>3</sup>

Perhaps responding to the changing practice, this Court's doctrine of equivalents decisions in the 1930s and 1940s focused mostly on limitations to the doctrine. See, e.g., Smith v. Magic City Kennel Club, Inc., 282 U.S. 784 (1931) (broad claim surrendered in response to Patent Office rejection cannot be reclaimed through doctrine of equivalents); Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211, 221 (1940) (even where abandoned claim narrower than granted one, abandoned claim cannot be revived by resort to the doctrine of equivalents because of the "injurious consequences" to the public and other inventors). In another case, Exhibit Supply Co. v. Ace Patents Corp., the Court noted a challenge to the continued legitimacy of the doctrine, and although not

<sup>&</sup>lt;sup>2</sup> See 3 Lipscomb's Walker on Patents § 11.1 at 284; § 11.2 at 290-91, § 11.3 at 292-300 (1985); Burton Amernick, Patent Law for the Nonlawyer 40 (1986).

<sup>&</sup>lt;sup>3</sup> See 2 Donald S. Chisum, Patents § 8.02[2], [4] (1995); Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198; Act of July 19, 1952, Pub. L. No. 82-593, ch. 11, § 112, 66 Stat. 798; Act of July 24, 1965, Pub. L. No. 89-83, § 9, 79 Stat. 261; Act of Nov. 14, 1975, Pub. L. No. 94-131, § 7, 89 Stat. 691. Thus, in the patent at issue in the Markman v. Westview Instruments, Inc. case before this Court (No. 95-26), U.S. Patent Re. 33,054, the elements of claim 1 are described in typically broad terms, e.g., "a data input device for manual operation," "a data processor including memory" which can record and store certain information, and an "optical scanner."

required to reach the question in that case, expressly left it open. 315 U.S. 126, 136 (1942) (finding the patentee not entitled to recover, "[w]hatever may be the appropriate scope and application of the doctrine of equivalents").

When, eight years later, this Court did address the question in Graver Tank, the doctrine of equivalents that emerged had a new justification and what appeared to be a narrower application. Without expressly stating that the doctrine had been revisited, the opinion cast the doctrine not as an aid to proper claim construction, but as a means by which courts could prevent injustice when the letter of the law was unavailing. Graver Tank, for the first time, discussed the doctrine of equivalents not as a means of interpreting the words of a patent, but as a separate inquiry resorted to after the meaning of the words of the patent had been determined and a claim of literal infringement rejected. 339 U.S. at 607. See Robert Meeks, Metaphors of Infringement and Equivalence: The Solution of Our Problems, 2 J. Intell. Prop. L. 279, 291 (1994) (noting that this approach originated in Graver Tank); see also, e.g., Palumbo v. Don-Joy Co., 762 F.2d 969 (Fed. Cir. 1985) (distinguishing between literal infringement and infringement under the doctrine of equivalents).

As recharacterized, the doctrine in many ways paralleled the "inequitable conduct" doctrine the Court had fashioned a few years before. See Precision Instrument Mfg. Co. v. Automotive Maintenance Mach., 324 U.S. 806 (1945) (barring enforcement of patent obtained through patentee's failure to disclose material information to patent office). In Precision Instrument, the Court recognized a duty to disclose all material information while prosecuting a patent application in order to avoid frauds on the Patent Office; in Graver Tank, the Court explained that the "essence" of the doctrine of equivalents "is that one may not practice a fraud on a

patent." 339 U.S. at 608. Such fraud is committed, the Court explained, by unsavory behavior by "an unscrupulous copyist" who by making "unimportant and insubstantial changes and substitutions . . . adding nothing" could otherwise "take the copied matter outside the claim, and hence outside the reach of the law." *Id.* at 607. Just as the inequitable conduct doctrine was a judicially fashioned bulwark protecting the public against unscrupulous patent applicants, the doctrine of equivalents was a judicially fashioned bulwark protecting patent holders from unscrupulous copyists.

Graver Tank singled out Winans v. Denmead as the source of the doctrine. The defendant in Winans had not simply used a device similar to the plaintiff's, he had walked into the plaintiff's shop, examined and measured the plaintiff's invention (a new type of railroad car), and then constructed a railroad car along the same principles, but of a slightly different shape. 56 U.S. (15 How.) at 332. Graver Tank further underscored its emphasis on the doctrine of equivalents as an extra-statutory power to prevent unjust outcomes by expressly confirming the trial court's finding that the accused product was "the result of imitation rather than experimentation or invention." Graver Tank, 339 U.S. at 612.

In contrast, the doctrine of equivalents as set forth in the decision below provides patent holders with more power to exclude than either the traditional doctrine of equivalents or the doctrine of equivalents reinvented in *Graver Tank*. Despite the now well-established routine practice of broad claiming by patent applicants, under the Federal Circuit's doctrine of equivalents, after an inventor has set forth the most liberal constructions of the invention that either he or his lawyers can imagine, in as many separate claims as they choose, courts are permitted to look at someone else's invention to arrive at an even broader construction.

Furthermore, the Federal Circuit has removed or cut back every limit ever placed by this Court on earlier versions of the doctrine. The power over additional categories of processes and products is made available to holders of all patents, whether pioneer inventions or bare improvements. Voluntary disclaimers during patent prosecution do not operate as a bar unless actually necessary to avoid prior art. Evidence or inference of copying is not a prerequisite to application of the doctrine. And the decision as to the range beyond the written claims a patent holder may control is left to the virtually unguided discretion of juries. None of this is mandated by this Court's previous jurisprudence, and none of it is advisable to establish or protect the patent bargain.

#### B. A Broad and Vague Doctrine of Equivalents Threatens to Undermine the Goals of the Patent Act.

The decision below is inconsistent with the rationale of patent law, which offers a bargain to inventors—the power to exclude for a limited number of years in return for disclosing their inventions—in order to benefit the public. See Bonito Boats, Inc., v. Thunder Craft Boats, Inc., 489 U.S. 141, 151 (1989). If not reversed, the decision will skew the patent bargain, providing patent holders with control over more than they invented and more than they disclosed—upsetting the "careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." Id. at 146.

Even before the decision below eliminated most remaining restraints on the doctrine of equivalents, the doctrine had become, in the Federal Circuit's jurisprudence, an issue of "maximum vagueness," and the "primary...

cause of the current uncertainty surrounding the scope of patent claims." 5

As this Court has long recognized, uncertainty sabotages the patent law's goal of encouraging innovation, by raising the risks of experimentation to other innovators. It leaves others without fair notice as to the areas in which they may operate without risking punishing litigation and potentially confiscatory penalties. This hinders business decisions about the direction research and development should take and inventors' decisions about what areas to avoid. The Federal Circuit's doctrine permits abusive infringement suits bringing considerable pressure on innocent inventors to settle. And it leaves the public with less experimentation, fewer improvements, and ultimately less invention.

Complaints about the doctrine discouraging research and innovation are commonplace, especially in our cutting-edge industries. See, e.g., Amy Carroll, Not Always the Best Medicine: BioTechnology and the Global Impact of United States Patent Law, 44 Am. U. L. Rev. 2433, 2490-91 (1995) (lenient application of the doctrine of equivalents to biotech patents "is detrimental to increased research and competitiveness"); Martha Ferziger, Monopolies on Addiction: Should Recreational Drugs Be Patentable, 1994 U. Chi. Legal F. 471, 481

<sup>&</sup>lt;sup>4</sup> Judge Paul Michel, The Challenge Ahead: Increasing Predictability in Federal Circuit Jurisprudence for the New Century, 43 Am. U. L. Rev. 1231, 1244 (1944) (hereinafter "Judge Michel").

<sup>&</sup>lt;sup>5</sup> Martin Adelman & Gary Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. Pa. L. Rev. 673, 682 (1989) (hereinafter "Adelman & Francione").

<sup>&</sup>lt;sup>6</sup> See United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236 (1942) ("A zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field.").

<sup>&</sup>lt;sup>7</sup> See Adelman & Francione, supra, at 683; Martin Adelman, The New World of Patents Created by the Court of Appeals for the Federal Circuit, 20 U. Mich. J. L. Ref. 979, 996 (1987).

(effect of doctrine of equivalents is to discourage drug research); Rafael Zahralddin, The Effect of Broad Patent Scope on the Competitiveness of United States Industry, 17 Del. J. Corp. L. 949, 955, 1002 (1992) (expanding patents by the doctrine of equivalents reduces the incentive for others to continue to innovate and develop the industry, posing "as great a threat as does foreign competition to the continued success of both the United States computer and electronics industry and the United States economy itself"); Michael Sanzo, Patenting Biotherapeutics, 20 Hofstra L. Rev. 387, 404 (1991) (doctrine of equivalents decision "inconsistent with the patent statute's objective of promoting innovation"); Robert Merges & Richard Nelson, On the Complex Economics of Patent Scope, 90 Colum. L. Rev. 839, 916 (1990) (expanding a patent via the doctrine of equivalents "diminishes incentives for others to stay in the invention game").

Having "failed to synthesize an articulable doctrine of equivalents jurisprudence" before, the court below has now compounded the problem by rendering the doctrine of equivalents even more amorphous. It has abandoned its at least declared goal of a doctrine applied as an "exception . . . not the rule" and has eliminated any barrier to its becoming at least "the second prong of every infringement charge, regularly available to extend protection beyond the scope of the claims," and quite plausibly the first and only prong. London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991).

Anyone with an arguably related claim now has a chance to win an infringement suit tried before unguided jurors who are asked to determine what a "substantial" difference is in a highly technical field with which they are not familiar. Moreover, an invention may be termed "not substantially different" or composed of "not substantially

different" elements—on the ground that the elements were known to be interchangeable with those mentioned in the claims—even though the inventor and his attorneys were unable to think of that invention or its allegedly interchangeable elements at the time they were attempting to draft the broadest claims defensible.

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In the doctrine as unleashed below, statutorily required "claims... cease to serve their intended purpose." London, 946 F.2d at 1538. They "effectively provide no notice" to the innovators and competitors on whom the public relies for future inventions.<sup>9</sup> The predictable impact on the "Progress of Science and useful Arts" <sup>10</sup> will be to deter progress even more substantially than the already "too uncertain" doctrine promulgated previously by that court.<sup>11</sup>

The premises of the patent bargain, "[t]he attractiveness of such a bargain, and its effectiveness in inducing creative effort and disclosure of the results of that effort, depend almost entirely on a backdrop of free competition in the exploitation of unpatented designs and innovations." Bonito Boats, 489 U.S. at 151. The decision below rips enormous and unpredictable holes in that backdrop, to the detriment of the scientific, engineering, and business communities—and therefore the public—in order to provide patent holders with windfalls they could not have expected and therefore did not rely on in choosing to invent and to disclose.

<sup>&</sup>lt;sup>8</sup> Kurt Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv. J. of L. & Tech. 281, 290 (1994).

Adelman & Francione, supra, at 683.

<sup>&</sup>lt;sup>10</sup> U.S. Constitution, art. I, § 8.

<sup>&</sup>lt;sup>11</sup> Judge Michel, supra, at 1236 ("The Application of the Doctrine of Equivalents is Too Uncertain."); see also Adelman & Francione, supra, at 676-77, writing in 1989 that in the first few years of the Federal Circuit's existence, it shifted the determination of the scope of patents away from the written and approved claims "through its routine use of the doctrine of equivalents."

#### II. A CAREFULLY CABINED DOCTRINE OF EQUIVA-LENTS COULD SERVE RATHER THAN FRUS-TRATE THE PURPOSES AND OPERATION OF THE PATENT STATUTE.

#### A. A Modern Doctrine of Equivalents.

A modern doctrine of equivalents, as initially explored in Graver Tank, in contrast to that promulgated by the decision below, could serve to reinforce the patent bargain, if carefully cabined. As Graver Tank recognized, the requirement that a patentee disclose the invention creates a risk that the disclosure could be misused to permit someone, bent on infringing, to make the invention with sufficient minor variations to hover just outside the borders of the patent claims. Placing the inventor at the mercy of someone who is deliberately acting as a pirate, rather than as an inventor, could "foster concealment rather than disclosure of inventions," and therefore impede "one of the primary purposes of the patent system." 339 U.S. at 607.

Thus, even in a patent system in which broad claiming is standard practice, there may be room for a doctrine aimed at deliberate subterfuge. Such a doctrine would provide patent holders a right to recover when their inventions are deliberately copied, with sufficient but insubstantial changes to permit the copier to avoid liability under 35 U.S.C. § 271 (literal infringement). If aimed precisely, such a doctrine of equivalents should not engender the chaos created by the doctrine of equivalents' decisions of the court below. Those at risk under the doctrine would be notified by their own behavior. Others would risk liability only for literal infringement of the invention described in a published claim.

Because the doctrine would be aimed at providing relief from a fraud, rather than from literal infringement, its applicability would depend on the behavior of the alleged infringer as well as the characteristics of the accused product or process. That two manufacturers of the same equipment might be treated differently under such a doctrine is consistent with the bargain proffered by patent law. A patentee discloses his invention in return for a limited enforceable monopoly. The patentee is not deprived of his bargain if a manufacturer invents equipment that is outside the scope of his patent claims, however "related." In contrast, the patentee is arguably deprived of his bargain if a second manufacturer takes advantage of the patent disclosure (or another public disclosure of the patented invention) to make equipment it could not otherwise have made, even if this manufacturer introduces insignificant changes to prevent the equipment from falling squarely within the claims. Arguably, patentees have not received the benefit of their bargains if they are prey to such copiers. In contrast, non-copiers, who also do not literally infringe, have neither taken unfair advantage of the disclosure nor trespassed on the monopoly actually requested by the inventor. Thus, the patent bargain is not furthered by permitting the patentee to exclude their inventions.

#### B. Rules of Application.

The evolution beyond Graver Tank needed to govern a modern doctrine of equivalents is the development of more precise means for distinguishing between "unscrupulous copyists" and innovators designing around a patent. Mere knowledge of the patent or the patented product or process should not itself trigger liability for a related but distinguishable innovation. It is well recognized that patent disclosures, and other public disclosures of the patented product or process, can also serve as springboards for genuine innovation by others. "[O]ne of the benefits of the patent system is the incentive it provides for 'designing around' patented inventions, thus creating new innovations." 12

#### 1. Invention

The inquiry should focus on whether the alleged copy is within the scope of what the patentee actually invented.

<sup>12</sup> Read Corp. v. Portec, Inc., 970 F.2d 816, 828 (Fed. Cir. 1992).

In other words, recovery would not be available unless evidence from claims not at issue, the specification, or the patentee's contemporaneous disclosures establish that the patentee contemplated either the specific copy at issue or the extension of the patent necessary to encompass it.

In applying the doctrine of equivalents, courts have long employed the standard that the accused product must not have been anticipated by or obvious in light of prior art. See, e.g., Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677 (Fed. Cir.) (suggesting the use of hypothetical claims to make the determination), cert. denied, 498 U.S. 992 (1990). That standard, however, limits the inventor only to what he could have invented, not what he did invent. It is perforce only an outermost limit. If it is the only limit placed on the application of the doctrine, the doctrine provides patent holders with control over far more than they invent.

Such a windfall for patent holders is inconsistent with the patent bargain and with the public interest. To maintain the long recognized balance between rewarding inventors and encouraging a thriving and competitive economy, it is necessary to ask also whether the alleged copy, or the extension of the patent necessary to encompass it, was actually contemplated by the patent holder. Such a standard would scarcely be new to the doctrine of equivalents. See, e.g., Ball & Socket Fastener Co. v. Kraetzer, 150 U.S. 111, 117 (1893) (denying recovery because the accused device was "never contemplated" by the patent holder).

This is a standard that was clearly met in *Graver Tank*. The patent specification expressly stated that the chemical composition used in the accused copy could be substituted for the preferred composition. 339 U.S. at 613; Adelman & Francione, *supra*, at 700, 706-07. Moreover, the accused copy fell within the literal terms of a number of the patent claims as written and granted. *Id.* at 709.

However, those claims had been invalidated because they also claimed embodiments that were not workable. Thus, in *Graver Tank* there was more than adequate evidence that the accused product was contemplated by the patent holder as one embodiment of his invention, so that the finding of liability did not grant the patent holder control over more than his invention.

Where the specification and claims expressly include the very product or process at issue, as in Graver Tank, the application of the test will be simple. However, the court would not necessarily be limited to such evidence. It could also be instructive to look at, for example, publications by the patent holder before or around the same time as the patent application was filed or descriptions of the invention provided to his patent attorney. In addition, comparisons of the claims with the accused product may also prove an aid in determining whether the accused product or process was contemplated by the patent holder. For example, if the accused product or process is not only outside the claims of the patent but is also an improvement over the patented invention, either generally or in the context in which it is used, that would tend to suggest that it is not a calculated copy, but a genuine innovation and outside the scope of the patent holder's invention.

Although the proposed standard falls far short of a bright line rule, it should prove easier to apply and more predictable than the otherwise uncabined "substantial difference" test adopted below. Application of a substantial difference test could, in appropriate cases, help determine which accused products and processes are sufficiently different in operation or structure that they were clearly not contemplated by the patent holder. But the test does not provide a means for establishing the affirmative case required by the patent bargain: that the accused product or process is within the invention for which the patent was granted. Thus, the proposed standard, which requires such an affirmative showing, is far more consistent

with the patent bargain, because it enforces the patent holder's power over his invention, and only his invention.

The substantial difference test, in comparison, merely asks the adjudicator to determine whether the accused product or process is substantially different from the patent claim—after both have been invented. This after-the-fact inquiry, unlimited by any consideration of what the patent holder understood or imagined while conceiving his invention and reducing it to practice, almost invariably sweeps in far more than the patent holder actually invented.

Furthermore, the additional gloss adopted by the court below, that elements known to be interchangeable with elements in the patent claims may be automatically substituted when assessing liability, guarantees a result inconsistent with the patent bargain. If the elements were known to be interchangeable at the time the patentee applied for the patent, then the only explanations for their not being included in at least one of the broad claims is either that the patentee did not imagine using such elements in this context, or that he specifically rejected them. There is no patent law purpose served by granting the patentee control over inventions he failed to invent or purposefully rejected. The rule is even more absurd when applied to pure combination patents. In these, all the elements are old art and well known to practitioners. The sole "inventive" act is to combine them. Under the Federal Circuit rule, however, the inventor of one combination is given control over many other combinations the inventor plainly did not think to combine.

In contrast, asking whether the accused product or process comes within the scope of what the patent holder actually invented refocuses the inquiry on the rights promised the patent holder in return for his disclosure.

#### 2. Enablement

A related, and necessary, safeguard would be to require that the patent, as written, enable a person of ordinary skill in the art to construct and use the accused product or process. Thus, recovery for alleged copying would only be available where the information provided in the patent specification would permit someone skilled in that technical area to figure out how to construct and use the alleged copy—either because the necessary steps are described or because they would be obvious to someone who worked in that field.

An enablement test ensures that the patent holder has performed his obligations under the patent bargain by making a disclosure sufficient to enable others to make and use the invention.<sup>14</sup> And this is a test clearly met in Graver Tank, where the patent specification expressly taught that the composition at issue could be substituted.

Absent such a test, and it is absent in the doctrine defined below, a nonsensical incongruity is created. The patent holder is permitted to recover when he has no claim covering the defendant's product or process, even though he could not have recovered if there were a claim literally infringed by it. He could not have recovered for literal infringement because the patent would have been found invalid for failing to satisfy the requirements of Section 112, which requires patents to provide sufficient information to enable others to make and use the invention. By introducing an enablement test into the

<sup>13</sup> This is not to suggest that the patent must enable others to make and use every aspect of every product or process that infringes under the doctrine of equivalents. Where the accused product or process includes not only apparatus or method steps that are alleged to infringe under the doctrine of equivalents but also equipment or method steps that are not alleged to infringe, the proposed test would require only that the patent cnable a person of ordinary skill in the art to make and use the apparatus or method steps alleged to infringe under the doctrine.

<sup>&</sup>lt;sup>14</sup> See Laura Handley, Refining the Graver Tank Analysis with Hypothetical Claims: A Biotechnology Exemplar, 5 Harv. J. of L. & Tech. 31, 55 (1991).

<sup>15 &</sup>quot;The specification shall contain a written description of the invention, and of the manner and process of making and using it,

doctrine of equivalents inquiry, this incongruity is eliminated, and the patent bargain reinstated.

For similar reasons, an enablement test would also bring the doctrine of equivalents in line with the so-called reverse doctrine of equivalents. The reverse doctrine of equivalents recognizes that an accused product or process may appear to fall within the literal terms of a patent claim but nonetheless be entirely distinguishable from the patent holder's invention. See Graver Tank, 339 U.S. at 608. A key method of determining whether an accused product or process falls within the scope of a patented invention is by analyzing whether the patent would have suggested the product or process adopted by the alleged infringer. If the patent would not have suggested the accused product or process, then the accused product or process does not literally infringe the patent—even though it fits within the words of the claims. Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537, 573 (1898) (no infringement because the patent "would scarcely have suggested the method [defendant] adopted to accomplish these results"). Thus, under the reverse doctrine of equivalents enablement is required to establish literal infringement. It is, therefore, inexplicable that enablement would not also be required to establish infringement under the doctrine of equivalents.

#### 3. Patent Prosecution Disclaimers

Consistent with confining the doctrine of equivalents to providing patent holders with the power to prevent unscrupulous copyists from stealing their inventions, express disclaimers during patent prosecution should be regarded as defining the inventions. Express limitations or other changes made during prosecution are made by the inventor, generally to satisfy a concern of the examiner.

They are made voluntarily. If the applicant believes the examiner is wrong, he has the right to appeal the decision. Thus, if the applicant chooses instead to rewrite the claims, and/or specification, it evidences his understanding that the abandoned elements were inaccurate or unnecessary to claim the invention. Furthermore, the disclaimer is part of the public record and thus furnishes notice to other inventors that the invention patented does not include the elements that were abandoned.

The rule that patent holders may not retrieve under the doctrine of equivalents what they voluntarily surrendered during patent presecution was, until the decision below, well established. See, e.g., Exhibit Supply Co., 315 U.S. 136 (amendments adopted in response to rejection for failure to claim the invention and inclusion of inoperative embodiments in the claims); see also Schriber-Schroth Co., 311 U.S. at 221; Magic City Kennel Club, 282 U.S. at 790; I.T.S. Rubber Co., 272 U.S. at 443. The position adopted below, however, is that patent holders may retrieve under the doctrine of equivalents what they voluntarily surrendered during patent prosecution, unless the specific element was surrendered to avoid prior art. Courts are therefore required to look behind the disclaimer in the patent's file wrapper and inquire why the patent holder abandoned the earlier description of his invention, and under most circumstances, the abandonment does not operate as a bar to recovery under the doctrine of equivalents.

To the extent that this rule imposes a bar only where what was disclaimed would also have been invalid under the prior art, the court below, as a practical matter, repealed the long-established estoppel bar altogether. This is because the bar, as limited, is just a subset of the rule that the doctrine of equivalents does not reach products or processes that were anticipated or obvious in light of prior art. Further, it is unclear how any bar of greater breadth could survive the court's reasoning. The

in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same." 35 U.S.C. § 112.

bases for applying the bar under other circumstances—
the notions that the public should be able to rely on such
public disclaimers and that the disclaimers evidence the
patent applicant's understanding of the scope of the invention—were perforce rejected by that court. Thus,
even if the court intended to preserve the additional—
and well-established—rule that a file wrapper disclaimer
acts as a bar even where the examiner was wrong about
the prior art, it left itself no ground on which to rest
such a rule.

The court's abandonment of the disclaimer bar generates uncertainty, which has a negative effect on further innovation, without adding anything of value in establishing or enforcing the patent bargain. The amendment of a claim or specification is a conscious and focused act. Patent applicants can be relied on not to relinquish descriptions of their inventions under these circumstances, absent prior art, that accurately portray their inventions. Thus, a patent applicant may limit a claim to exclude embodiments he does not believe are operable or may change language that is susceptible to a variety of readings to language that more accurately describes his invention. Under neither circumstance does it serve the public to permit the applicant to later recant those changes when faced with a product or process from someone whose conceptual approach or research permitted him to draw different conclusions.

A doctrine of equivalents, aimed at protecting patent holders from unscrupulous copyists—and carefully cabined to limit the protection to the invention the patentee conceived, disclosed, and did not publicly disclaim—could reinforce the patent bargain without injecting the uncertainty and disincentives created by the decision below and its immediate predecessors.

#### III. APPLICATION OF THE DOCTRINE OF EQUIVA-LENTS IS PROPERLY A QUESTION FOR THE JUDGE, NOT THE JURY.

The doctrine of equivalents must be grounded, if at all, in the court's equitable jurisdiction. It is not provided for by the patent statute which, in contrast, requires patent holders to publicly claim the full and exact scope of what the applicant purports to have invented. See 35 U.S.C. § 112. Application of the doctrine is therefore properly consigned to the court rather than a jury.

Historically, the doctrine of equivalents has generally been applied by the courts. The traditional doctrine of equivalents, because it was simply a gloss on the proper scope of a patent, was routinely applied by judges in the course of determining such questions. The modern doctrine of equivalents that emerged in, and following, *Graver Tank*, however, because it is justified on equitable grounds, provides a distinct basis for consigning its application to judges rather than juries.

That decision, of course, did not expressly discuss whether the doctrine of equivalents was an equitable or a legal right, but the doctrine as described carried the indicia and coloration of an equitable right. That it was applicable only after a determination that the accused product or process did not literally infringe, 339 U.S. at 607, fit the equitable paradigm of an alternative applicable only when no legal remedy was available. Further, the doctrine was not discussed in reference to any statutory provision but described as a doctrine that "evolved" and was applied by the courts "when the proper circumstances" arise as protection from those who "practice a fraud on a patent," id. at 608, apparently as an exercise of the court's jurisdiction to do equity notwithstanding the absence of legislative authority. As, five years before, the Court had found a right to relief from enforcement of a patent obtained by failing to report material information to

the Patent Office, the Court appeared in Graver Tank to find a right to relief from copiers in the traditional equitable "jurisdiction . . . to give relief for frauds." United States v. American Bell Tel. Co., 128 U.S. 315, 370 (1888). Both doctrines, fashioned after the merger of law and equity, represented assertions of judicial power to provide relief where the victim of the fraud had no remedy under the provisions of the statute.

Certainly courts and commentators understood the decision in this way. See, e.g., Texas Instruments Inc. v. United States ITC, 988 F.2d 1165, 1173 (Fed. Cir. 1993) (doctrine "judicially devised to do equity where no literal infringement" to prevent pirating of patentee's invention); Valmont Indus. v. Reinke Mfg. Co., 983 F.2d 1039, 1043 (Fed. Cir. 1993) ("equitable tripartite test of the doctrine of equivalents," a doctrine which "equitably expands exclusive patent rights"); American Home Prods. Corp. v. Johnson & Johnson, 25 U.S.P.Q.2d (BNA) 1954, 1957 (Fed. Cir. 1992) ("application of the equitable powers of the court under the doctrine of equivalents"); Perkin-Elmer Corp. v. Westinghouse Elec. Corp., 822 F.2d 1528, 1532 (Fed. Cir. 1987) ("the doctrine of equivalents is designed to do equity, and to relieve an inventor from a semantic strait jacket when equity requires"); Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861 (Fed. Cir. 1985). Similarly, in Donald Chisum's multi-volume treatise, the doctrine of equivalents is described as an "equitable doctrine," 16 and in the writings of other commentators, as "an equitable thumb on the patentee's side of the policy balance." 17 "a creature of equity." 18 and

"equitable in origin." 19

Moreover, reconstitution of the doctrine of equivalents as an equitable doctrine to provide relief against deliberate, but cunning, copying was, and is, a sensible response to the focus in modern patent law and practice on comprehensive claims. See 35 U.S.C. § 112. To simply relieve patent holders of that obligation under the doctrine of equivalents, as the court below has done, without invoking the courts' equitable jurisdiction to provide relief from fraud, is judicial repeal of unambiguous legislation. In contrast, a doctrine of equivalents fashioned by the court, as an exercise of its inherent equitable jurisdiction, to provide relief in limited circumstances—the fraudulent misuse of the patentee's disclosure—is more easily reconciled with the provisions of the patent statute.

As an exercise of power grounded in equity, the doctrine of equivalents is necessarily outside the scope of the Seventh Amendment right to jury trial. See Ross v. Bernhard, 396 U.S. 531, 538 (1970). This is how the analogous inequitable conduct issue has been viewed. See, e.g., Paragon Podiatry Lab, Inc. v. KLM Labs., Inc., 984 F.2d 1182, 1190 (Fed. Cir. 1993) ("inequitable conduct in a patent suit, being entirely equitable in nature, is not an issue for a jury to decide[, it] is a discretionary decision to be made by the judge on his or her own factual findings"); Concept Design Elecs. & Mfg. v. Duplitronics,

<sup>16 4</sup> Donald S. Chisum, Patents § 18.04 (1995).

<sup>&</sup>lt;sup>17</sup> Devon Burton, Bringing Theory into Practice: Predictable Scope for Functional Patent Claims, 42 UCLA L. Rev. 221, 229-30 (1994).

<sup>18</sup> Thomas Landry, Certainty and Discretion in Patent Law: The On Sale Bar, the Doctrine of Equivalents, and Judicial Power in the Federal Circuit, 67 S. Cal. L. Rev. 1151, 1193 (1994).

<sup>&</sup>lt;sup>19</sup> Harold Wegner, Equitable Equivalents: Weighing the Equities to Determine Patent Infringement in Biotechnology and Other Emerging Technologies, 18 Rutgers Computer & Technology L.J. 1 (1992).

<sup>&</sup>lt;sup>20</sup> In patent law, the traditional Seventh Amendment inquiry into 1791 English practice has not proved particularly helpful. In 1791, patent rights could be asserted in courts of both law and equity. Issues such as scope of claims and infringement were cognizable in both and, although there were differences in the relief available, remedies available from courts of equity included monetary as well as injunctive relief.

Inc., 34 U.S.P.Q.2d (BNA) 1789 (Fed. Cir. 1995) (same).

The close parallels between the doctrines argue for an identical conclusion with respect to the modern doctrine of equivalents. To the extent application of either doctrine involves issues of fact in common with legal claims, of course, the parties retain the right to have those questions tried to a jury first, to avoid invading the jury right attaching to the legal claims by the operation of collateral estoppel. See Ross v. Bernhard, 396 U.S. at 537-38. With that admonition, however, the modern doctrine of equivalents, as it emerged from Graver Tank, and as it is detailed here, is an equitable issue, properly consigned to the discretion of the judge, and reviewed under an abuse of discretion standard.

#### CONCLUSION

Because the decision below is fundamentally at odds with the intent and purpose of the patent system, in which "free exploitation of ideas will be the rule, to which the protection of a federal patent is the exception," <sup>21</sup> amicus respectfully asks this Court to reverse that decision.

Respectfully submitted,

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<sup>&</sup>lt;sup>21</sup> Bonito Boats, 489 U.S. at 151.

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No. 95-728

# IN THE SUPREME COURT OF THE UNITED STATES, OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL CO., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE MICRON SEPARATIONS, INC. IN SUPPORT OF PETITIONER

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## TABLE OF CONTENTS

	Page
TABLE OF AUTHORITIES	ii
STATEMENT OF INTEREST	1
STATUTORY PROVISIONS	3
SUMMARY OF ARGUMENT	4
ARGUMENT	5
HILTON DAVIS DIRECTLY CONFLICTS WITH FEDERAL CIRCUIT AND SUPREME COURT PRECEDENT PROHIBITING THE BROADENING OF	
CLAIMS	5
CONCLUSION	10

## TABLE OF AUTHORITIES

Cases	Page
Coon v. Wilson, 113 U.S. 268 (1885)	7
In re Freeman, 30 F.3d 1459 (Fed. Cir. 1994)	7
Hilton Davis Chem. Co. v. Warner-Jenkinson Co.,	
62 F.3d 1512 (Fed. Cir. 1995) (en banc)	passim
Miller & Co. v. Bridgeport Brass Co.,	
104 U.S. (14 Otto) 350 (1882)	7
Modine Mfg. Co. v. United States Int'l Trade	
Comm'n, 75 F.3d 1545 (Fed. Cir. 1996),	
petition for cert. filed, Mar. 25, 1996	10
Pall Corp. v. Micron Separations, Inc.,	
66 F.3d 967 (Fed. Cir. 1995), petition	
for cert. filed, No. 95-1096, Dec. 26, 1995	5
Quantum Corp. v. Rodime, PLC, 65 F.3d 1577	
(Fed. Cir. 1995), petition for cert. filed,	
Feb. 26, 1996	7
Seattle Box Co. v. Industrial Crating & Packing,	
731 F.2d 818 (Fed. Cir. 1984).	7

Statutes	Page
35 U.S.C. § 251	3, 6, 7
35 U.S.C. § 252	6
35 U.S.C. § 304.	6
35 U.S.C. § 305.	3, 6, 7

#### IN THE SUPREME COURT OF THE UNITED STATES OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V

HILTON DAVIS CHEMICAL COMPANY, Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

#### STATEMENT OF INTEREST

Micron Separations, Inc. ("MSI") files this amicus curiae brief in support of petitioner Warner-Jenkinson's petition seeking reversal of the Federal Circuit's decision in this case, and in support of Warner-Jenkinson's request that reasonable limits be placed on the doctrine of equivalents. MSI has obtained consent from both petitioner Warner-Jenkinson and respondent Hilton Davis to file this amicus brief, and files those consents with this brief.

MSI has a particular interest in this proceeding. It is a Massachusetts-based high technology company that develops nylon membrane filtration products for the biotechnology industry. MSI developed a product specifically to avoid express claim limitations in a patent owned by Pall Corporation, and now has been in a ten-year patent battle with Pall over this patent's scope. MSI currently has pending a petition for certiorari, Micron Separations, Inc. v. Pall Corp., No. 95-1096, filed December 26, 1995, seeking reversal of a Federal Circuit judgment which used the Hilton Davis decision to allow expansion of the Pall patent beyond its literal scope. MSI's case necessarily will be impacted by this Court's decision in Hilton Davis.

MSI submits this amicus brief to bring to the Court's attention an argument regarding the scope of the patent law's doctrine of equivalents which MSI believes will not otherwise be presented by the parties in their main briefs: namely, how can the Federal Circuit permit the broadening of a patent claim under the doctrine of equivalents to ignore an express claim limitation, when both the reexamination and reissue statutes (35 U.S.C. §§ 251, 305) prohibit the broadening of claims so long after issuance?

#### STATUTORY PROVISIONS

35 U.S.C. § 251 provides in pertinent part:

Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent. No new matter shall be introduced into the application for reissue.

No reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent. (Emphasis added).

......

35 U.S.C. § 305 provides in pertinent part:

In any reexamination proceeding under this chapter, the patent owner will be permitted to propose any amendment to his patent and a new claim or claims thereto.... No proposed amended or new claim enlarging the scope of a claim of the patent will be permitted in a reexamination proceeding under this chapter... (Emphasis added).

Pall Corporation also has charged other newer MSI membrane products with infringement of the same patent under the doctrine of equivalents. See Micron Separations, Inc. v. Pall Corp., D. Mass. No. 94-11377-WGY; and Pall Corp. v. Micron Separations, Inc., D. Mass. No. 95-12731-WGY, which is consolidated with Pall Corp. v. Fisher Scientific Co., D. Mass. No. 95-12473-WGY. Because the Federal Circuit's claim interpretation broadened the scope of the Pall claim, the Patent Office has now instituted a reexamination procedure in view of "substantial new questions" regarding the patentability of the claimed technology.

#### SUMMARY OF ARGUMENT

This case involves a question of fundamental importance to patent law -- how broadly may a patent claim be construed under the doctrine of equivalents when the accused device or process clearly does not fall within the literal scope of the patent claim at issue? Petitioner Warner-Jenkinson is expected to address many of the key issues impacting on this question, and to establish the need for a doctrine that allows the public to make rational predictions of what infringes a patent claim.

One issue Warner-Jenkinson may not address, and which therefore is discussed in this amicus brief, concerns the incongruence between the Federal Circuit's Hilton Davis decision permitting a fact finder to broaden a claim beyond its express limitations, and existing patent law statutes and decisions which prohibit broadening a claim when using a legitimate Patent Office procedure.

This amicus brief also is intended to demonstrate the prevalence of similar cases involving the doctrine of equivalents. As the MSI case (petition for certiorari pending, No. 95-1096) and Hilton Davis show, those who seek to manufacture and design in competitive areas need to be able to operate their businesses knowing that an express numerical range in a patent is meaningful, and that the claimed range will not be unreasonably broadened under the doctrine of equivalents.

There is a need for the Supreme Court to provide concrete, narrowly defined limits to the doctrine of equivalents, so that businesses can make reasonable decisions based on patent claims as written.

#### **ARGUMENT**

WITH FEDERAL CIRCUIT AND SUPREME COURT PRECEDENT PROHIBITING THE BROADENING OF CLAIMS.

Both Hilton Davis and the MSI case involve patents on polymer membrane technology, with claims including narrow numerical ranges. In Hilton Davis, the patenteerespondent narrowed its claims during the patent application process to require the use of a pH range of "from approximately 6.0 to 9.0." Hilton Davis, 62 F.3d at 1515-16. Similarly, in the MSI case, the patentee-respondent narrowed its claims to require use of a nylon having a specific chemical ratio within a range of "about 5:1 to about 7:1." Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed. Cir. 1995).

In Hilton Davis, the Federal Circuit agreed that a pH of 5 does not literally infringe a claim limitation of "approximately 6.0 to 9.0," but concluded that a pH of 5 nevertheless infringes under the doctrine of equivalents. Hilton Davis, 62 F.3d at 1515-16. In the MSI case, the Federal Circuit agreed that a chemical ratio of 4:1 does not literally infringe a claim limitation of "about 5:1 to about 7:1," but concluded that a ratio of 4:1 nevertheless infringes, also under the doctrine of equivalents. Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1217 (Fed. Cir. 1995). The Federal Circuit clearly sees no problem using the doctrine of equivalents to expand the scope of a claim beyond its literal meaning — in both MSI and Hilton Davis, the court upheld a finding of infringement even though the

accused processes and products were well below the claimed lower limit of the ranges.

Yet, while the Federal Circuit is willing to allow a fact finder to broaden claims, the Federal Circuit has been particularly strict about prohibiting the Patent Office from doing the same. Indeed, the Federal Circuit has very strictly construed statutes which *prohibit* a patent-holder from broadening claims at the Patent Office except in limited circumstances.

For example, 35 U.S.C. § 305, relating to reexamination proceedings at the Patent Office, permits a patent owner to amend claims to avoid the prior art so long as the patent owner does not "enlarg[e] the scope of a claim..." 35 U.S.C. § 305.<sup>2</sup> The statute relating to reissue proceedings, 35 U.S.C. § 251, also allows amendment of claims, but requires that "[n]o reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent." 35 U.S.C. "10 Patent of the original patent." 35 U.S.C. § 251, also allows amendment of claims, but requires that "[n]o reissued patent shall be granted enlarging the scope of the claims of the original patent." 36 U.S.C. § 251, also allows amendment of claims, but requires that "[n]o reissued patent shall be granted enlarging the scope of the claims of the original patent." 36 U.S.C. § 251, also allows amendment of claims, but requires that "[n]o reissued patent shall be granted enlarging the scope of the claims of the original patent."

In interpreting the reexamination statute in *Quantum* Corp. v. Rodime, PLC, the Federal Circuit invalidated a patent claim which was "broadened" when the patentee merely added the word "approximately" during a reexamination proceeding to make a claim read "at least approximately 600" tracks per inch. Quantum Corp. v. Rodime, PLC, 65 F.3d 1577, 1579, 1584 (Fed. Cir. 1995). petition for cert. filed, Feb. 26, 1996.4 In addressing the reissue statute in Seattle Box Co. v. Industrial Crating & Packing, the Federal Circuit held that adding the phrase "substantially equal to" during a reissue proceeding to make a claim read "substantially equal to or greater than" a pipe diameter improperly broadened the claim, and therefore prohibited the patent owner from recovering damages for the defendant's activities before the reissue patent was granted. Seattle Box, 731 F.2d 818, 822, 828 (Fed. Cir. 1984).

The limitations on broadening found in 35 U.S.C. §§ 251 and 305 trace back to long-standing Supreme Court precedent, under which the broadening of patent claims after issuance was held to be the exception and not the rule. Miller & Co. v. Bridgeport Brass Co., 104 U.S. (14 Otto) 350 (1882); see Coon v. Wilson, 113 U.S. 268 (1885). These cases confirm the reasonable policy furthered by 35 U.S.C. §§ 251 and 305, and adopted by the Federal Circuit in Quantum and Seattle Box, that to determine what products or processes can or cannot be made, used, or sold, the public is entitled to rely on patent claims as they issue. Hilton Davis directly clashes with that policy. Hilton Davis provides a patentee with an incentive to sidestep the reissue

<sup>&</sup>lt;sup>2</sup> During reexamination, the Patent Office considers whether a prior art technical reference has any bearing on the patentability of claims in an issued patent. 35 U.S.C. §§ 304-305.

<sup>&</sup>lt;sup>3</sup> During reissue proceedings, a patentee is allowed to correct errors in the patent as originally issued. 35 U.S.C. §§ 251-252. The reissue statutes provide only a limited two year period in which a patentee may correct a claiming mistake by seeking claims broader than those in the original patent. They also limit the potential recovery based on such broadened claims to the period after the claims were broadened, to avoid ensnaring one who began competing before the broadened claim was issued and became known to the public.

<sup>&</sup>lt;sup>4</sup> The test for whether a patent claim is broadened, although originally applied to reissued patents, applies to reexamined patents as well. *In re Freeman*, 30 F.3d 1459, 1464 (Fed. Cir. 1994).

and reexamination statutes by allowing retroactive enforcement of a claim broadened under the doctrine of equivalents. There is no reason a patent owner should be able to skirt established Patent Office rules and restrictions to obtain from a court relief not otherwise available.

This incongruity between the Federal Circuit prohibiting the broadening of claims during reexamination or reissue proceedings at the Patent Office, but permitting the broadening of claims at trial under the doctrine of equivalents, is highlighted by the opposite outcomes likely to result had Hilton Davis sought through reexamination or reissue the same claim scope it was awarded under the doctrine of equivalents. That is, if at the time Hilton Davis filed suit, it had sought reexamination or reissue at the Patent Office, and during that proceeding it had changed the lower limit of its claim from "approximately 6.0" to "approximately 5.0," under section 305's limitations on reexamination and section 251's limitations on reissue, the court would have been obligated to invalidate the claim. If Hilton Davis had asked the Patent Office (rather than the court) to fix its claims, and the Patent Office had done so, Hilton Davis could not have enforced its claims against Warner-Jenkinson.

The Federal Circuit provides no explanation for its uneven treatment of patent claims. On the one hand, the Federal Circuit gives fact finders free reign to broaden and enforce patent claims well beyond their express numerical limits. Yet on the other hand, the Federal Circuit invalidates claims for "enlarging" their scope merely by adding the word "approximately" to a numerical value. The Federal Circuit's decision allowing the broadening of claims through the doctrine of equivalents essentially renders the reexamination and reissue statutes superfluous. In view of

the statutory restrictions on reexamination and reissue, patentees now are certain to avoid those congressionally-sanctioned proceedings, opting instead for the wide-open possibility that a jury or judge will broaden claims at trial using the *Hilton Davis* doctrine of equivalents.

#### CONCLUSION

The Hilton Davis conclusion that a process infringes even though it falls outside the terms of the patent claim legitimizes after-the-fact enlargement of a claim. That conclusion directly contradicts patent law statutes which prohibit enlarging claims in a reexamination or reissue years after the patent issues, and law requiring express claim language that is "conspicuous and unambiguous..." such that "the interested public is entitled to rely on it...." Modine Mfg. Co. v. United States Int'l Trade Comm'n, 75 F.3d 1545, 1552 (Fed. Cir. 1996), petition for cert. filed, Mar. 25, 1996. Without the ability to rely on "conspicuous and unambiguous" written claim language, how can honest competitors determine whether to invest in making a competitive product or using a competitive process?

Under the guise of the doctrine of equivalents, the Federal Circuit now allows enlargement and enforcement of a claim well beyond its literal terms. That broad view of the doctrine of equivalents goes far beyond what the doctrine was intended to do, and stymies the public from making rational predictions of what infringes and what does not.

Accordingly, the judgment of the Court of Appeals for the Federal Circuit should be reversed, and reasonable limitations should be placed on the doctrine of equivalents, in line with statutes and long-standing policy.

Dated: April 11, 1996

Respectfully submitted,

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Supreme Court, U.S. F I L E D

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IN THE

## Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

٧.

HILTON DAVIS CHEMICAL CO.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF AMICUS CURIAE OF GHZ EQUIPMENT COMPANY IN SUPPORT OF PETITIONER

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#### **QUESTION PRESENTED**

Whether patent infringement exists whenever the accused product or process is "equivalent" to the invention claimed in the patent, in that differences are not "substantial" as determined by a jury, even though the accused product is outside the literal scope of the patent claim.

## TABLE OF CONTENTS

	Page
QUE	STION PRESENTED
TAB	LE OF AUTHORITIES iii
INTI	EREST OF AMICUS CURIAE
SUM	IMARY OF ARGUMENT 2
ARG	SUMENT 3
I.	THE EXPANSIVE VERSION OF THE DOCTRINE OF EQUIVALENTS ADOPTED BELOW INVADES THE PROVINCE OF CONGRESS
П.	THE DECISION BELOW IMPROPERLY DISREGARDS THE NARROW EQUITABLE CONSTRAINTS ON THE DOCTRINE OF EQUIVALENTS
III.	THE LOWER COURT'S APPROACH THREATENS TO STIFLE INNOVATION 11
CON	CLUSION

## TABLE OF AUTHORITIES

Cases:	Page
Claude Neon Lights, Inc. v. E. Machiett & Son,	
36 F.2d 574 (2d Cir. 1929)	9
Graver Tank & Mfg. Co. v. Linde Air Products, Co.	
339 U.S. 605 (1950)	6,8
Keystone Bridge Co. v. Phoenix Iron Co.,	
95 U.S. 274 (1877)	7
Pennwalt Corp. v. Durand-Wayland, Inc.	
833 F.2d 931 (Fed. Cir. 1987), cert. denied,	
485 U.S. 1009 (1988)	7
Royal Typewriter Co. v. Remington Rand Inc.,	
168 F.2d 691 (2d Cir. 1948)	4,9
United Carbon Co. v. Binney Co.,	
317 U.S. 228 (1942)	4
Constitution & Statutes:	
U.S. Const.:	
U.S. Const.: Art. 1, § 8	1,6
Patent Act of 1952, 35 U.S.C. §§ 101 et seq	passim
35 U.S.C. § 112	
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35 U.S.C. § 252	-
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of the Scope of the Doctrine of Equivalents,
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Madison, The Federalist No. 43 (Cooke ed. 1961) 15

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## Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC.,

Petitioner.

V

HILTON DAVIS CHEMICAL CO.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF AMICUS CURIAE OF GHZ EQUIPMENT COMPANY IN SUPPORT OF PETITIONER

#### INTEREST OF AMICUS CURIAE

Pursuant to Rule 37.3 of this Court, GHZ Equipment Company (GEC) respectfully submits this brief amicus curiae in support of Petitioner. Written consent to the filing of this brief has been granted by counsel for all parties. Copies of the letters of consent have been lodged with the Clerk of the Court.

GEC is an equipment manufacturer and systems integrator that specializes in the development of wireless technology utilizing millimeter wave frequencies for advanced telecommunications applications. The company has been the proponent of several patents and a litigant in a prior controversy arising from the central issue presented by this case. We are thus keenly aware of the danger to innovation posed by a too-liberal construction of the doctrine of equivalents. For this reason, we believe our perspective will complement the brief of Petitioner and assist the Court in the resolution of this case.

#### SUMMARY OF ARGUMENT

This case involves, not just the esoteric particulars of patent law, but the proper scope of judicial authority under Article I, Section 8 of the Constitution. By adopting an expansive version of the "doctrine of equivalents," the lower court has supplanted a comprehensive legislative scheme governing the granting and enforcement of patents with a judicially crafted alternative. This outcome conflicts with the patent claiming system established by Congress. The doctrine of equivalents, developed as an equitable exception applicable only in unusual circumstances, should be returned to its former status on the margins of patent law. Otherwise, innovation that Congress intended to foster may well be stifled.

#### ARGUMENT

I. THE EXPANSIVE VERSION OF THE DOCTRINE OF EQUIVALENTS ADOPTED BELOW INVADES THE PROVINCE OF CONGRESS

The doctrine of equivalents "derives from the principle that an inventor should be secure in the patent rights granted by the law, even against those who manage to avoid the letter of the invention as it was described or claimed in the patent document." Pet. App. 35A (Newman, J., concurring). Historically, the doctrine has been applied as a rare, equitable exception in circumstances where a plain-meaning construction of a patent would not otherwise pre-empt an infringer. Thus, the lower court's ruling that a trial judge "does not have discretion to choose whether to apply the doctrine of equivalents [even] when the record shows no literal infringement," id. at 18A, is an ill-conceived departure from the original rationale for the doctrine. The procedural upshot of the lower court's position is that "the doctrine of equivalents is a virtually uncontrolled and unreviewable license to juries to find infringement if they so choose." Id. at 55A (Plager, J., dissenting).

This result undermines the regulatory regime established by Congress in the Patent Act of 1952, 35 U.S.C. §§ 101, et seq. (the "Act"). The Act protects a patent holder by authorizing an action for infringement if another person makes, uses, or sells a patented product or process without a license. 35 U.S.C. § 271(a). The Act, in turn, protects the public -- and the patent holder's competitors -- by providing precise notice of the scope of the patent holder's rights: the patent monopoly extends no further than the patentee's

<sup>&</sup>quot;The Congress shall have Power... To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. Const. art. I, § 8.

claims.<sup>2</sup> To ameliorate any unintended consequences of this rule, the Act provides a remedy if a patent holder has inadvertently misstated claims.<sup>3</sup> The decision below, by

To receive a patent an inventor must submit a specification which "shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112. The inventor must state his claims with particularity, not only to mark the boundaries of his monopoly rights, but also to give the public fair notice of those rights:

From the beginning courts have held that, since the claim is the measure of the monopoly, it must advise the public of its scope, and may not be stated in terms of ends or purposes, for that would extend the monopoly to all contrivances which would accomplish the same results, and these might owe nothing whatever to the patentee.

Royal Typewriter Co. v. Remington Rand Inc., 168 F.2d 691, 693 (2d Cir. 1948) (L. Hand, J.); see also United Carbon Co. v. Binney Co., 317 U.S. 228, 232 (1942) (Brandeis, J.) (patent claims must be stated with particularity to provide fair notice of the scope of the patent holder's monopoly).

35 U.S.C. § 251 (1988) ("Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application, for the unexpired part of the term of the original patent. No new matter shall be introduced into the application for reissue"). If a patent is reissued, the Act protects the legitimate interests of those who relied upon the original patent. 35 U.S.C. § 252 ("No reissued patent shall abridge or affect the right of any person or his

"particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention" (35 U.S.C. § 112), frustrates the statute's basic scheme. Hence, if broadly applied, the doctrine of equivalents "can eviscerate both the claiming system and the goal of providing notice to the public of the scope of a patent. The doctrine achieves these results by enlarging, in an unpredictable way, the scope of a patent beyond the boundaries claimed by the applicant in her prosecution of her patent before the PTO." Martin J. Adelman & Gary L. Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. PA. L. REV. 673, 680 (1989).

The claiming system and notification function embodied in the Act are not trifling details. They embody a balance between private and public rights that Congress deemed imperative in effectuating its "Power . . . To promote the Progress of Science and useful Arts." U.S. Const. art. I, § 8. Congress has conditioned the grant of a patent upon an inventor's careful delineation of the scope of its claimed monopoly. This serves the twin purposes of limiting the reach of the monopoly and warning the public how far it may compete with the patent holder without risking liability for infringement. The court below has replaced this legislative balance of competing interests with the indefensible policy of

successors in business who made, purchased or used prior to the grant of a reissue anything patented by the reissued patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased or used, unless the making, using or selling of such thing infringes a valid claim of the reissued patent which was in the original patent").

protecting patent holders against even marginally colorable instances of infringement.

This case starkly illustrates the problem. Hilton Davis brought an infringement action against Warner-Jenkinson for independently devising an ultrafiltration process that operated at a lower pH range than claimed in its patent. Pet. App. 4A-5A. To obtain its own patent, however, Hilton Davis engaged in the identical conduct that it now asserts is "wrongful" on the part of Warner-Jenkinson: i.e., designing an ultrafiltration process to operate at a different pH range from the range specified in yet another patent for ultrafiltration -- the Booth patent. See id. at 4A. Thus, if Warner-Jenkinson is liable for infringement based on the doctrine of equivalents, it follows that Hilton Davis should be liable for infringement to the holder of the Booth patent. In short, infringement here - if it exists at all -- is merely colorable. But because of the ruling below, even marginal infringement may stand as the basis for a jury award of more than \$3.5 million. See id. at 88A (Nies, J., dissenting).

Whether this result can be justified, or is even tolerable, is not the essential point. Congress has enacted a statute that requires would-be patent holders to claim their inventions with particularity. Under our federal system the judiciary lacks constitutional authority to displace this policy in a field where Congress holds plenary authority. "[T]he courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office . . . " Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278 (1877). "Those associated with the practice of patent law are often admonished to recall that the claims, as distinguished from the rest of the specification, define the 'metes and bounds of the invention." Kurt L. Glitzenstein, A Normative and

Positive Analysis of the Scope of the Doctrine of Equivalents, 7 Harv. J.L. & Tech. 281, 281 (1994) (quoting Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931, 946 (Fed. Cir. 1987)(Bennett, J., dissenting in part), cert. denied, 485 U.S. 1009 (1988)). The version of the doctrine of equivalents adopted below erroneously disregards this fact.<sup>4</sup>

# II. THE DECISION BELOW IMPROPERLY DISREGARDS THE NARROW EQUITABLE CONSTRAINTS ON THE DOCTRINE OF EQUIVALENTS

The judiciary's understandable concern for fundamental fairness undergirds the doctrine of equivalents. In some circumstances, courts have recognized a need to accord patentees broader protection than is provided by the clear

The majority opinion below also undermines the legislative compromises embodied in the reissue provisions of the 1952 Act. See note 3, above. Under the Act, a patent holder may amend or correct a deficient patent, but third parties have intervening rights to make, use, or sell products or services not encompassed within the scope of the original patent. See 35 U.S.C. §§ 251, 252 (1988). By making an expansive doctrine of equivalents broadly available as a basis for infringement actions, the Federal Circuit has created a handy means of circumventing the reissue provisions while replacing them with a onesided policy in favor of the patent holder. Unlike the reissue provisions, the doctrine of equivalents imposes no two-year time limitation and offers no intervening rights. These features make the doctrine of equivalents exceptionally attractive to patent holders. See Martin J. Adelman & Gary L. Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. PA. L. REV. 673, 719 (1989). But, as Judge Nies pointed out in dissent, "If we are to persist in an extra-statutory remedy, it should be as fair to both sides as that provided in the statute." Pet. App. 104A (Nies, J., dissenting).

terms of their patent claims to insure that inventors are not "at the mercy of verbalism." Graver Tank & Mfg. Co. v. Linde Air Prod. Co., 339 U.S. 605, 607 (1950). In fashioning the rules announced below, however, the Federal Circuit improperly departed from the original understanding behind the doctrine of equivalents. The doctrine is an equitable exception to the straightforward construction of a patent claim. As such, it should be applied only in exceptional circumstances -- and, even then, by a judge, not a jury.

Two opinions written by Judge Learned Hand are instructive in this context. In Royal Typewriter Co. v. Remington Rand, Inc., 168 F.2d 691 (2d Cir. 1948), Judge Hand discussed both the basis for and the inherent limitations of the doctrine of equivalents:

[A]fter all aids to interpretation have been exhausted, and the scope of the claims has been enlarged as far as the words can be stretched, on proper occasions courts make them cover more than their meaning will bear. If they applied the law with inexorable rigidity, they would never do this, but would remit the patentee to his remedy of reissue. . . [A]t times [federal courts] resort to the "doctrine of equivalents" to temper unsparing logic and prevent an infringer from stealing the benefit of the invention. No doubt, this is, strictly speaking, an anomaly; but it is one which courts have frankly faced and accepted almost from the beginning. All patents are entitled to its benefit to an extent, measured on the one hand by their contribution to

the art, and on the other by the degree to which it is necessary to depart from the meaning to reach a just result.

Id. at 692 (emphasis added). See also Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574, 575 (2d Cir. 1929) ("The doctrine of equivalents, though well settled for many years, is anomalous, if the claim is measured only by its words, and for this reason we once went so far as to say that it means no more than that the language of claims shall be generously construed").

According to Judge Hand, because of the obvious tension between the doctrine of equivalents and the claiming system established by Congress, the doctrine is an "anomaly" applicable only on "proper occasions." 168 F.2d at 692. The doctrine, in short, should be invoked rarely -- not (as will hereafter be the case if the decision below is affirmed) "as a second prong to [any] infringement suit, in addition to the statutory cause of literal infringement." Pet. App. 53A (Plager, J., dissenting). Commentators concur. "It is generally agreed that any use of the doctrine of equivalents conflicts with the notion that the claims define the scope of patent protection; given the importance of claims in the patent system, such conflict should be avoided in all but a very few cases." Martin J. Adelman & Gary L. Francione, The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. PA. L. REV. 673, 715 (1989) (footnote omitted).

Equally important, Judge Hand assumed that the decision whether to apply the doctrine belonged in the hands of the judge, not the jury. E.g., 168 F.2d at 693-694 (noting that "the dilemma which has led to the very 'doctrine of

equivalents' itself' necessarily involves legal judgments implicating "a question of degree, and courts have differed, and always will differ, as to the allowable latitude in a given instance"). The lower court improperly ceded this vital "question of degree" to a jury. The doctrine of equivalents, precisely because it stands in significant tension with the congressional policy embodied in the patent claiming process (35 U.S.C. § 112), should be applied in the discretion of the trial court. Accord Pet. App. 81A (Lourie, J., dissenting) ("I consider that the [doctrine of equivalents] is an equitable remedy for the judge to decide whether to apply, or not to apply, perhaps after the jury has made factual findings as to all the relevant factors which the Graver opinion outlines. I believe that this judgment, one of suitability or appropriateness, requires weighing all the relevant factors, given any jury determinations concerning those factors").

## III. THE LOWER COURT'S APPROACH THREATENS TO STIFLE INNOVATION

Since the early nineteenth century, Americans have been distinguished by their technological ingenuity.<sup>5</sup> That collective trait has flourished, at least in part, because innovators could take risks within the relative safety of a stable and predictable framework of law. By holding that the doctrine of equivalents is applicable in virtually every

infringement action, the Federal Circuit has erected a significant barrier to innovation.

The Federal Circuit's decision substantially increases the risks of litigation, particularly among inventors who pursue incremental innovation. The consequent uncertainty surrounding their work has several detrimental effects:

First, uncertainty about the scope of patent protection hinders both patent holders and potential defendants from assessing the possible outcome of litigation or from making other business decisions, such as the direction that research and development efforts should take. Second, a primary purpose of the protection of intellectual property is to encourage the production of inventions, literary works, and the like. Patent law in particular provides a claiming system to put other potential inventors on notice of the precise boundaries of the invention so that they may 'design around' the patent other inventive efforts. The uncertainty generated by the doctrine of equivalents frustrates and chills the activities of these other inventors, who must be concerned about whether their efforts will be met by an infringement suit based on the amorphous doctrine of equivalents. Third, the doctrine permits abusive infringement actions claiming that the defendant infringes under the doctrine of equivalents and that a jury must decide the correctness of the claim. The imperative to settle under these circumstances is almost overpowering. Fourth, due process concerns are potentially raised to the extent that pervasive and systemic uncertainty generated by the doctrine of

See ALEXIS DE TOCQUEVILLE, DEMOCRACY IN AMERICA 460 (J.P. Mayer ed. & George Lawrence trans. 1969) ("In America the purely practical side of science is cultivated admirably, and . . . the Americans always display a clear, free, original, and creative turn of mind").

equivalents destroys the ability of patent claims to provide fair notice, so that they effectively provide no notice.

Martin J. Adelman & Gary L. Franciene The Doctrine of Equivalents in Patent Law: Questions that Pennwalt Did Not Answer, 137 U. PA. L. REV. 673, 682-83 (1989) (footnotes omitted). The decision below, therefore, will significantly discourage incremental innovation.

One may question whether incremental innovation should be encouraged. Judge Newman, in a concurring opinion below, concluded that the doctrine of equivalents served a valuable purpose precisely because it discouraged incremental innovation.

If minor improvements are likely to be captured by the doctrine of equivalents, this might cause the would-be competitor to move to diverging areas instead of simply tagging along at the periphery of the patentee's claims. On this theory the doctrine of equivalents, like the grant of broad claims, could encourage 'leapfrogging' advances instead of minor improvements and substantial imitation. This would enhance the growth of technology overall, and thus serve the public welfare.

Pet. App. 41A (Newman, J., concurring). We disagree. The conclusion that an economic incentive for "leapfrogging" will foster greater technological originality is based on a misunderstanding of technological growth. Many important advances in technology are not "original" or "pioneering." See, e.g., Devendra Sahal, PATTERNS OF TECHNOLOGICAL INNOVATION 37 (1981) ("The results from the investigation of a number of other areas, such as the aluminum production, electricity generation, and synthetic fiber industries point to a substantially similar conclusion: Progress frequently takes the form of several minor innovations") (citations omitted). Moreover, disfavoring incremental advances through an expanded doctrine of equivalents could leave the nation with

Discouraging incremental innovation exacts high social costs. One commentator has concluded that these costs are so high that the doctrine of equivalents should be abandoned altogether:

If the doctrine [of equivalents] is viable, . . . the subsequent inventor in every instance bears the costs of uncertainty, regardless of whether the original inventor elects to claim narrowly in reliance on the doctrine, or as broadly as possible. This observation follows from the fact that when the original inventor becomes the plaintiff in an infringement action, he then has an incentive to exploit the probability that the court will err in his favor, even if he knows that the scope of the literal claims exactly equals the hypothetical limit claim. In view of this, the possibility that some original inventors might bear inefficiently large ex ante transactional costs if denied the opportunity in ex post litigation to rely on the doctrine of equivalents is almost certainly outweighed by the fact that every subsequent inventor incurs uncertainty costs due to a feared misapplication of the doctrine. The specter of the doctrine of equivalents is therefore likely to cause society as a whole to lose the benefit of the inventive efforts of those who choose to invest in the development of incremental advances over existing art.

the worst of both worlds: patent holders would hold the power effectively to veto all but the most striking advances, while would-be innovators – even innovators who might have made original advances – would be dissuaded from risking their livelihood on the off-chance that they might fail to make a breakthrough discovery.

Kurt L. Glitzenstein, A Normative and Positive Analysis of the Scope of the Doctrine of Equivalents, 7 HARV. J.L. & TECH. 281, 331 (1994). To the degree that patent holders win infringement actions based on the doctrine of equivalents, would-be inventors have a substantial disincentive to enter the risky zone of incremental innovation. The patent holder who invokes the doctrine of equivalents wins only if the public loses.

This divergence of private and public interests marks a regrettable departure from the original understanding underlying the constitutional grant of patent rights. James Madison concluded that the congressional power to grant patents and copyrights was justifiable because the "public good fully coincides in both cases with the claims of individuals." THE FEDERALIST No. 43, at 288 (Jacob E. Cooke ed. 1961). In other words, by giving inventors monopoly rights, the public would enjoy the fruits of a vibrantly innovative economy. An expansive version of the doctrine of equivalents, however, severs the connection between private interest and public good by enriching patent rights at the expense of technological improvement. The Court should revise the lower court's construction of the doctrine of equivalents so that private interest and the public good may again coincide.

#### CONCLUSION

The decision below should be reversed.

Respectfully submitted,

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In the Supreme Court

OF THE

**United States** 

OCTOBER TERM, 1996

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

VS.

HILTON DAVIS CHEMICAL CO.,

Respondent.

BRIEF OF AMICUS CURIAE ON BEHALF OF SEAGATE TECHNOLOGY, INC. IN SUPPORT OF PETITIONER IN WHICH THE FOLLOWING CORPORATIONS JOIN:

3COM CORPORATION
BORLAND INTERNATIONAL, INC.
CHEVRON CORPORATION
CISCO SYSTEMS, INC.
COHERENT, INC.
EASTMAN MEDICAL PRODUCTS, INC.
GIRO SPORT DESIGN, INC.
HEWLETT-PACKARD COMPANY
READ-RITE CORPORATION
STORAGE TECHNOLOGY CORPORATION
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## TABLE OF CONTENTS

			Page
STA	ATE	MENT OF THE AMICI CURIAE	2
STA	ATU	TORY PROVISIONS INVOLVED	2
SU	MM.	ARY OF ARGUMENT	4
AR	GUN	MENT	5
I.	CC	NTRARY TO THE DECISION OF THE	
		DERAL CIRCUIT, GRAVER TANK	
		ONFIRMS THAT THE DOCTRINE OF	
		UIVALENTS RESTS SOLELY IN	
	EQ	OUITY YTIU	5
	A.	Of Equivalents Is As Much An Equitable	
		Remedy For The Court Alone As Is The	10
	n	Reformation Of A Contract	10
	В.	That A Finding Of Equivalents Involves A Determination Of Fact Makes The Doctrine	
		Of Equivalents No Less An Equitable	
		Remedy	13
II.	AP	PLICATION OF THE DOCTRINE OF	
		UIVALENTS SHOULD ALWAYS	
		CLUDE CONSIDERATION OF	
	CE	RTAIN EQUITABLE FACTORS	16
	A.	Actions Of The Patentee Should Be	
		Considered Before Application Of The	
		Doctrine Of Equivalents	17
	B.	The Doctrine Of Equivalents Is But A	
		Substitute For A Reissue Which Is Itself An	
		Equitable Remedy	20
	C.	Both Statutes And Case Law Require That	
		The Relief Available For Infringement By	
		Equivalents Should Involve The Same	
		Equitable Considerations That Apply To	23
CO	NCI	Infringement Of A Reissue Patent	25
1.11	IV	USIUN	43

## TABLE OF AUTHORITIES

## Cases

	Page(s)
Andrews v. Essex Fire & Marine Ins. Co., 1 F. Cas. 885, 3 Mason 10 (1822)	11
Baltzer v. Raleigh & Augusta Railroad Co.,	
115 U.S. 634 (1885)	10, 11
Barton v. Barbour, 104 U.S. (14 Otto) 126 (1881)	13
Bate Refrigerating Co. v. Sulzberger, 157 U.S. 1 (1894)	10
Camp v. Boyd,	
229 U.S. 530 (1913) 5, 6, 10, 12,	21, 25
Chauffeurs, Teamsters & Helpers, Local No. 391 v. Terry,	
494 U.S. 558 (1990)	14
Craig v. Leslie, 16 U.S. (3 Wheaton) 563 (1818)	6
Curtis v. Loether, 415 U.S. 189 (1974)	14
Granfinanciera, S.A. v. Nordberg, 492 U.S. 33 (1989)	14
Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950)	passim
Hearne v. New England Mutual Marine Ins. Co., 87 U.S. (20 Wall.) 488 (1874)	12
Hilton Davis Chemical Co. v. Warner-Jenkinson Co., Inc.,	17.22
62 F.3d 1512 (Fed. Cir. 1995)2, 9, 16,	17, 23
Interstate Circuit v. United States, 304 U.S. 55 (1938)	14, 16
Ivinson v. Hutton, 98 U.S. (8 Otto) 79 (1878)	10, 11

## TABLE OF AUTHORITIES

## Cases

V1	Page(s)
Katchen v. Landy, 382 U.S. 323 (1966)	13
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Moore v. United States, 91 U.S. (1 Otto) 270 (1875)	13, 14
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S & E Contractors, Inc. v. United States, 406 U.S. 1 (1972)	10
Snell v. Atlantic Fire & Marine Ins. Co. of Providence,	
98 U.S. (8 Otto) 85 (1878)	11

#### No. 95-728

#### TABLE OF AUTHORITIES

#### Cases

Page (s	)
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United States v. Milliken Imprinting Co., 202 U.S. 168 (1906)	1
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Walden v. Skinner, 101 U.S. (11 Otto) 577 (1879)	5
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Rules and Statutes	
35 U.S.C. § 112	8
35 U.S.C. § 251 3, 2	4
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	5
Federal Rules of Civil Procedure, Rule 52 1	5
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UNION CARBIDE CORPORATION
WESTERN DIGITAL CORPORATION
WYKO CORPORATION

#### STATEMENT OF THE AMICI CURIAE

The parties listed above as amici curiae file this brief in the appeal of Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., 62 F.3d 1512 (Fed. Cir. 1995). Written consent to the filing of this brief has been obtained from the petitioner and the respondent and is being filed herewith.

Amici consist of several high technology companies which owe much of their success to their innovative technology. Collectively, these amici are the owners of thousands of patents, and thus, share the same interest in having a reliable patent system as an integral part of the intellectual property landscape. As such, amici need to have some measure of certainty in determining their own strengths and vulnerabilities when reviewing their own patent portfolios, and likewise, when a patent has been asserted against them.

The Federal Circuit's decision in Hilton Davis erroneously makes the doctrine of equivalents an unreasonable part of the infringement analysis in every patent case. Now, the review of every allegedly infringed patent must include not only an evaluation of the scope of the stated claims, but must also somehow incorporate use of a crystal ball to "guesstimate" how far a given case will be stretched by the doctrine of equivalents.

Amici urge the Court to reverse the Federal Circuit's decision in Hilton Davis.

#### STATUTORY PROVISIONS INVOLVED

35 U.S.C. § 112, second paragraph, provides in pertinent part that:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. 35 U.S.C. § 251, 4th paragraph, provides that:

No reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent.

35 U.S.C. § 252 of the patent statute provides that:

The surrender of the original patent shall take effect upon the issue of the reissued patent, and every reissued patent shall have the same effect and operation in law, on the trial of actions for causes thereafter arising, as if the same have been originally granted in such amended form, but insofar as the claims or the original and reissued patents are identical, such surrender shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent, to the extent that its claims are identical with the original patent, shall constitute a continuation thereof and have effect continuously from the date of the original patent.

No reissued patent shall abridge or affect the right of any person or his successors in business who made, purchased or used prior to the grant of a reissue anything patented by the reissued patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased or used, unless the making, using or selling of such thing infringes a valid claim of the reissued patent which was in the original patent. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased or used as specified, or for the manufacture, use of sale of which substantial preparation was made before the grant of the reissue, and it may also provide for the continued practice of any process patented by the reissue, prac-

ticed, or for the practice of which substantial preparation was made, prior to the grant of the reissue, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the grant of the reissue.

#### SUMMARY OF ARGUMENT

The doctrine of equivalents is an equitable exception to the rule that the literal terms of patent claims define infringement. A favorable application of the doctrine can afford a remedy to the patentee beyond that which could have been provided had the patent claims been literally applied. In this way, application of the doctrine acts in much the same manner as reformation of a contract. In both cases, the court alone goes beyond the literal letter of the law to afford the injured party a remedy in equity. In both cases, the court considers appropriate equitable factors before determining whether the remedy is even warranted.

U.S. 605 (1950), this Court recognized that the following factors should be considered before application of the doctrine: (1) whether the accused device was the result of copying or independent development; (2) whether those skilled in the art had knowledge of the interchangeability of the contested elements; and (3) the pioneer or primary status of the claimed invention. To the Graver Tank factors, Judge Lourie, in his dissent below, suggested that the following factors be added: (1) anything done by the patentee that would impair the ability of the public to reasonably understand from the claims what is being patented; and (2) the failure of the patentee to seek reissue of the original patent to cover the accused embodiment. Hilton Davis, 62 F.3d at 1547 (Lourie, J., dissenting).

Thus, application of the doctrine of equivalents should involve weighing of equitable factors on both sides, those

favoring the patentee and those favoring the alleged infringer. Moreover, the actions of the patentee (e.g., his failure to seek a reissue or his excessive delay in bringing the infringement action) may figure prominently in the equities determining the applicability of the doctrine, while the actions of the accused infringer (e.g., whether there was copying or independent development or traditional grounds for intervening rights) may have more impact in the resulting relief aspect of the case involving damages and injunctions. Furthermore, as a matter in equity, application of the doctrine (both in the decision to apply the doctrine and the resulting relief) lays within the province of the judge, not a jury.<sup>1</sup>

Despite this Court's clear precedents, the Federal Circuit failed to recognize and apply the *Graver Tank* factors in the manner instructed by this Court. It also ignored the equitable status of the doctrine, and instead erroneously left to the jury the task of going outside the patent claims to provide an equitable remedy for the patentee.

#### **ARGUMENT**

I.

CONTRARY TO THE DECISION OF THE FEDERAL CIRCUIT, GRAVER TANK CONFIRMS THAT THE DOCTRINE OF EQUIVALENTS RESTS SOLELY IN EQUITY.

This Court has long acknowledged and heeded the ageold adage that "equity regards as done that which ought to be done." Camp v. Boyd, 229 U.S. 530, 559 (1913); United

In a case where there is no literal infringement and the only relief available is equitable relief under the doctrine of equivalents, there should be no right to a jury trial under classic application of the Seventh Amendment to the U.S. Constitution

States v. Colorado Anthracite Co., 225 U.S. 219, 223 (1912); Craig v. Leslie, 16 U.S. (3 Wheaton) 563, 578 (1818). Courts are often called upon to go beyond the "law" (particularly when interpreting legal documents such as contracts) to provide a remedy which will insure that the application of the "literal" law does not result in injustice. Craig, 16 U.S. at 578. When a court does so, it is acting in "equity." While making reference to the learned and often quoted Second Circuit Judge Learned Hand in Royal Typewriter Co. v. Remington Rand, Inc., 168 F.2d 691, 692 (2d Cir. 1948), this Court confirmed, in the seminal decision of Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 608 (1950), that where the legal document was a patent, the goal of "equity" is the same: to do "that which ought to be done." Camp, 229 U.S. at 559.

This Court recognized that a rigid application of patent law can at times be strict and unbending and may deny relief where it should be justly awarded. To prevent such injustice, this Court, in *Graver Tank*, again gave its approval to the then century old "doctrine of equivalents." *Id.* The Court acknowledged that the doctrine had evolved to prevent "a fraud on a patent" where a patentee is unable to prove literal infringement. *Id.* Thus, the doctrine of equivalents clearly came into being in order to provide a remedy in certain circumstances where the patentee's legal claim of literal infringement had failed.

This Court in Graver Tank used words like "piracy" and "fraud" to both explain the basis for the doctrine and to impress that resort to the doctrine should only be had in extreme or extraordinary circumstances. In further explaining the basis for the doctrine, the Court embraced the wisdom of Judge Learned Hand in Royal Typewriter, and quoted with approval his decision to apply the doctrine of equivalents "[t]o temper unsparing logic and prevent an infringer from stealing the benefit of the invention." Graver

Tank, 339 U.S. at 608. To be sure, Judge Hand viewed and applied the doctrine of equivalents as one in equity, and this Court has expressly approved of his reasoning in doing so. *Id*.

Nevertheless, the Federal Circuit wrestled needlessly with the question of whether the doctrine of equivalents was one in "equity" or one in "law." It unfortunately reached the wrong conclusion. The majority below had only to look to Graver Tank and this Court's approval of Judge Learned Hand's occision in Royal Typewriter. Judge Hand's opinion rested on a long line of precedent from this Court, including Winans v. Denmead, 56 U.S. (15 How.) 330 (1853).

However, the majority position was taken over a vigorous dissent by four Justices, including Justice Taney. The dissent, written by Justice Campbell, would have held the patentee to his express claim limitation. The dissent noted that under the Patent Act, the patentee is obliged "to describe his invention, in such full, clear, and exact terms, that from the description, the invention may be constructed and used. Its principle and modes of operation must be explained; and the invention shall particularly 'specify and point' out what he claims as his invention." Moreover, the dissent feared that "a relaxation of these wise and salutary requisitions of the act of Congress" would result in "mischievous, . . . oppressive and costly litigation, . . . exorbitant and unjust pretensions and vexatious demands." Id., at 347 (Campbell, J., dissenting).

However, the majority's holding can be explained by noting that the defendant was a clear pirate, who (after visiting the patentee's railroad yard, measuring and taking notes) reproduced its own substitute railroad car with the same gauge steel (a critical benefit of the invention) as the

<sup>&</sup>lt;sup>2</sup>Winans v. Denmead was the first ocassion where this Court went outside of the patent claims to find infringement and held a defendant liable for infringement despite the fact that it was not infringing a specific claim limitation. In reaching its decision, the Court appears to have relied upon the language in the claim that referred back to the specification to apply the traditional "central claiming" rule of construction which provides that when a patentee claims his invention as described, he is understood to claim not only the particular machine described, but all other embodiments of the machine even though there is a change in form. 56 U.S. at 341.

Judge Hand enunciated the doctrine as one exercised in equity in order to obtain a "just result," and noted that:

[A] patent is like any other legal instrument; but it is peculiar in this, that after all aids to interpretation have been exhausted, and the scope of the claims has been enlarged as far as the words can be stretched, on proper occasions courts make them cover more than their meaning will bear. If they applied the law with inexorable rigidity, they would never do this, but would remit the patentee to his remedy of re-issue, and that is exactly what they frequently do. Not always, however, for at times they resort to the "doctrine of equivalents" to temper unsparing logic and prevent an infringer from stealing the benefit of the invention. No doubt, this is, strictly speaking, an anomaly; but it is one which courts have frankly faced and accepted almost from the beginning. All patents are entitled to its benefit to an extent, measured on the one hand by their contribution to the art, and on the other by the degree to which it is necessary to depart from the meaning to reach a just result.

Royal Typewriter, 168 F.2d at 692 (emphasis added) (internal citations omitted).

Similarly, in order to reach a "just result," this Court in Graver Tank applied the same doctrine to ensure that "fraud on a patent" would not lie when the essence of a claimed invention had been appropriated. Graver Tank, 339 U.S. at 608. The same balance enunciated by Judge Learned Hand thus laid the foundation for this Court's decision in Graver Tank, and continues to this day undisturbed as the rationale for granting relief to a patentee where

patentee's car. The defendant varied only the shape of the car, an immaterial element, from the shape claimed.

literal infringement cannot be proven, and the letter of the law affords no relief.

Notwithstanding this clear precedent, the Federal Circuit became confused. It no doubt took this Court's holding that "[a] finding of equivalence is a determination of fact" to mean that only a "jury" can make such determinations. This flawed reasoning resulted in the Federal Circuit's declaration that this Court has not previously dealt with the "doctrine of equivalents" as one in "equity." It then erroneously categorized the doctrine as one at "law," thus leaving factual determinations in the arena of the jury, when a jury is used. With this initial error, the majority in *Hilton Davis* went on to conclude that:

By referring to the doctrine as a doctrine of fairness, neither the Supreme Court nor this court has invoked the myriad implications of an alternative to legal remedies. In addition, neither the Supreme Court nor this court has invoked equity in the technical sense of a set of principles originating in England to compensate for the historically harsh rules of common law. Graver Tank does not discuss any of the principles commonly attending the chancellor's invocation of equitable power, such as the "unclean hands" doctrine, the elevated burden of proof, the abuse of discretion standard of review, or the mandatory balancing of the equities.

Hilton Davis, 62 F.3d at 1521 (emphasis added).

The majority, thus, completely misunderstood the Graver Tank Court's instructions and rationale for applying the doctrine of equivalents. Once the majority committed the fatal error of not understanding the doctrine as one in "equity," it had set itself upon a course of reasoning from which there was no return.

A. Finding Infringement Under The Doctrine Of Equivalents Is As Much An Equitable Remedy For The Court Alone As Is The Reformation Of A Contract.

As was acknowledged by Judge Learned Hand, "a patent is like any other legal instrument." Royal Typewriter, 168 F.2d at 692. An appropriate analogy can be drawn between a patent and a contract where a patent is viewed in the classic sense as a contract between the United States government and the patentee. See, e.g., S & E Contractors, Inc. v. United States, 406 U.S. 1, 15 (1972); Bate Refrigerating Co. v. Sulzberger, 157 U.S. 1 (1894).

Just as equity occasionally intercedes to correct an error in a contract in order to provide a remedy where none exists at law (i.e., performance within the four corners of the agreement), equity at times intervenes to provide a remedy for a patentee where the legal remedy has failed (i.e., literal infringement of the claims). In both instances, equity is said to intervene to do "that which ought to be done." Camp v. Boyd, 229 U.S. at 559.

In the case of a contract, the general rule of law is that the terms, conditions and remedies of the contracting parties are defined within the four corners of the written agreement. J. Calamari, Law of Contracts, (2d ed. 1977). Thus, where the parties have freely entered into the contract, they must live with its terms, since a court is only capable of enforcing the contract as it is written. However, the reality of the harshness of this rule has been long recognized by this Court. See, e.g., Ivinson v. Hutton, 98 U.S. (8 Otto) 79, 82 (1878).

For nearly a century this Court has been mindful that in a contract, "a mistake cannot be corrected, in conformity with our judicial system, in a court of law." Northern Assurance Co. v. Grand View Building Asso., 183 U.S. 308, 334 (1901); see also, Baltzer v. Raleigh & Augusta Railroad Co.,

115 U.S. 634, 645 (1885). However, preferring not to leave the contracting parties without a remedy, due solely to a mistake in their agreement, the *Northern Assurance* Court went beyond the terms of the contract to fashion a remedy in equity and noted that:

No one can doubt that, in a proper case of this kind, an equitable remedy exists. 'There cannot be, at the present day,' says Mr. Justice Story, 'any serious doubt that a court of equity has authority to reform a contract, where there has been an omission of a material stipulation by mistake...

Northern Assurance Co., 183 U.S. at 334 (citing Andrews v. Essex Fire & Marine Ins. Co., 1 F. Cas. 885, 3 Mason 10, (1822)); see also, Walden v. Skinner, 101 U.S. (11 Otto) 577, 583 (1879).

Thus, this Court has before it nearly two centuries of precedents for providing a remedy in equity to relieve contracting parties of their mutual mistakes. Typically, the remedy has been to reform the contract to reflect the parties' true intent. Accordingly, "[i]t is well settled that courts of equity will reform a written contract where, owing to mutual mistake, the language used therein did not fully or accurately express the agreement and intention of the parties." Philippine Sugar Estates Development Co. v. Government of Philippine Islands, 247 U.S. 385, 389 (1918) (citing Snell v. Atlantic Fire & Marine Ins. Co. of Providence, 98 U.S. (8 Otto) 85, 88-91 (1878)); Baltzer, 115 U.S. at 645.

Furthermore, this Court has carefully mandated that "reformation is not an incident to an action at law, but can be granted only in equity." United States v. Milliken Imprinting Co., 202 U.S. 168, 173 (1906); see also, Ivinson, 98 U.S. at 82 ("Power to reform written contracts for fraud or mistake is everywhere conceded to courts of equity, and it is equally clear that it is a power which cannot be exercised by

common law courts"); Hearne v. New England Mutual Marine Ins. Co., 87 U.S. (20 Wall.) 488, 490 (1874).

As in the case of a contract, mistakes in a patent can be corrected in court only in equity. To be sure, the Graver Tank Court was fully cognizant that the remedy that it was called upon to provide was not one which was available at law. That is, the remedy did not flow from the literal claims of the patent and the Court acknowledged as much when it observed that: "[i]f accused matter falls within the claims, infringement is made out and that is the end of it." Graver Tank, 339 U.S. at 607. But, that was not "the end of it" in Graver Tank. That the Court in Graver Tank knew that it was initially confronted with a remedy which could only be rendered in equity, was clear when it pointed out the many equitable considerations which must go into the balance in applying the doctrine of equivalents.

Even prior to Graver Tank, this Court approved of a resort to equity to provide a remedy to the patentee where it was clear that were the patentee to be held to the letter of his claims, an injustice would result. Winans v. Denmead, 56 U.S. (15 How.) 330 (1853). This remedy of patent reformation (as it may be called) has come to be known as the doctrine of equivalents and it "regards as done that which ought to be done." Camp v. Boyd, 229 U.S. at 559. The doctrine allows a court to look beyond the four corners of the patent and the literal language of the claims (as the law mandates) to determine exactly what it was (what was the invention) that the parties intended to protect. In exercising its equitable powers to afford justice, the court then grants to the patentee the entire invention which both parties (the patentee and the government) must have intended be covered in the original patent. See, e.g., United States v. Old Settlers, 148 U.S. 427, 464 (1893) (holding a court has the discretion to reform a contract in order to render a judgment which is right between claimants and the government); see

also, McClure v. United States, 116 U.S. 145, 149 (1885) for the same proposition. This is equity and nothing more.

B. That A Finding Of Equivalents Involves A Determination Of Fact Makes The Doctrine Of Equivalents No Less An Equitable Remedy.

It is well settled that "the right of trial by jury does not extend to cases of equity jurisdiction." This Court has held that:

If it be conceded or clearly shown that a case belongs to this class [equity], the trial of questions involved in it belongs to the court itself, no matter what may be its importance or complexity.

Katchen v. Landy, 382 U.S. 323, 337 (1966) (citing Barton v. Barbour, 104 U.S. (14 Otto) 126, 133-34 (1881)); see also, Moore v. United States, 91 U.S. (1 Otto) 270 (1875). Thus, once a matter is properly in equity, all issues whether they be of fact or law are to be decided by the court alone. Moore, 91 U.S. at 273.

As such, the right to a jury trial guaranteed to cases at law by the Seventh Amendment to the United States Constitution has no application to equity cases. The Seventh Amendment provides in pertinent part that: "In suits at common law, where the value in controversy shall exceed twenty dollars, the right of trial by jury shall be preserved." The phrase "at common law" refers to "suits in which legal rights [are] to be ascertained and determined, in contradistinction to those where equitable rights alone [are] recognized, and equitable remedies [are] administered." Parsons v. Bedford, Breedlove & Robeson, 28 U.S. (3 Pet.) 433, 447 (1830) (emphasis in original).

In order to determine whether legal rights are involved, courts resort to the well-established two-prong test enunciated in *Tull v. United States*, 481 U.S. 412 (1987). "First, we compare the statutory action to 18th-century actions

15

brought in the courts of England prior to the merger of the courts of law and equity. Second, we examine the remedy sought and determine whether it is legal or equitable in nature." Id. at 417-18 (internal citations omitted). "The second stage of this analysis is more important than the first." Granfinanciera, S.A. v. Nordberg, 492 U.S. 33, 42 (1989).

As previously noted, the doctrine of equivalents (which has no statutory basis), is most analogous to contract reformation. In 18th-century England, contract reformation was clearly an action at equity.

More importantly, the remedy sought under the doctrine of equivalents is equitable. It is of no consequence in applying this remedy that factual issues must be determined. This Court has long held that in equity, issues of fact are properly determined by the court alone. *Moore*, 91 U.S. at 273; *Interstate Circuit v. United States*, 304 U.S. 55, 56 (1938).

Furthermore, it matters not in the least that in the application of this remedy where the court is "reforming" the patent, that the patentee is awarded money damages in the form of restitution, since this Court has similarly recognized that money damages can be equitable. Chauffeurs, Teamsters & Helpers, Local No. 391 v. Terry, 494 U.S. 558, 570 (1990); Curtis v. Loether, 415 U.S. 189, 197 (1974). Likewise, this Court has instructed that "a monetary award incidental to or intertwined with injunctive relief may be equitable." Curtis, 415 U.S. at 197 (citing Tull, 481 U.S. at 424); see also, Mitchell v. Robert DeMario Jewelry, Inc., 361 U.S. 288, 292 (1960). As such, the fact that money may change hands makes the remedy no less equitable and the issue no less a matter for the court acting alone.

Through application of the doctrine of equivalents, a patentee is generally seeking relief in the form of an injunction and compensation for infringement which would have been available had there been literal infringement. However, since the patentee did not claim his invention as broadly as he could have, in compliance with the mandate of 35 U.S.C. § 112, he is forced now to rely solely on the equitable remedy of the doctrine of equivalents. See, Winans v. Denmead, 56 U.S. at 347 (Campbell, J., dissenting).

Inasmuch as application of the doctrine of equivalents affords an equitable remedy (affording a remedy where none exists at law), there is no Seventh Amendment right to a jury. The job, then, is one for the court alone, acting in equity.

The Federal Circuit was apparently not listening to this Court's explicit instructions and guidance in applying the equitable doctrine of equivalents. Instead, the Federal Circuit continually referred to the fact that there were "factual determinations" which it said required application of the doctrine of equivalents to be made by a jury. The court refused to accept that a court sitting in equity is not only fully capable of making factual determinations, but is required to do so. As this Court has previously noted, old Equity Rule 70½, which essentially became Fed. R. Civ. Pro. 52, provided: "In deciding suits in equity, including those required to be heard before three judges, the court of first instance shall find the facts specially and state sepa-

<sup>&</sup>lt;sup>3</sup>As with a contract, the reformation of a contract may well result in the court awarding money damages as a part of the remedy, yet the

matter of reforming that contract and handing out damages as a result remains a remedy which only a court may apply. See, Walden v. Skinner, 101 U.S. 577 (1879).

<sup>&</sup>lt;sup>4</sup>Section 112, second paragraph, of the Patent Statute provides in pertinent part that a patent specification shall:

conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

rately its conclusions of law thereon." Interstate Circuit, 304 U.S. at 56 (1938) (emphasis added); see also, Los Angeles Gas & Electric Corp. v. Railroad Com. of California, 289 U.S. 287, 328-29 (1933) (Butler, J., dissenting).

Consequently, the involvement of facts in the determination of whether or not to apply the doctrine of equivalents is immaterial to the question of whether application of the doctrine is left to a judge or jury. Rather, the doctrine must be seen as one in equity which affords an equitable remedy. The equitable decision of whether or not to apply the doctrine, and then how to apply it in individual cases, must be made by a court, as there is no right to a jury trial in equity cases.

II.

# APPLICATION OF THE DOCTRINE OF EQUIVALENTS SHOULD ALWAYS INCLUDE CONSIDERATION OF CERTAIN EQUITABLE FACTORS.

Since application of the doctrine of equivalents favors an equitable result at the expense of legal certainty (at least as far as the meaning and scope of patent claims are concerned), it is appropriate to consider specific equitable factors to determine whether or not application of the doctrine is warranted. This Court's Graver Tank decision is instructive on a number of these factors; yet, the Federal Circuit again misread Graver Tank and completely missed the mark in applying, or rather in not applying those factors in Hilton Davis, 62 F.3d at 1521.

Although the majority may have been confused in its reading of *Graver Tank*, Judge Lourie's dissent shows that he fully comprehended this Court's decision and its application to the fundamental tenets of patent law. In his dissent, Judge Lourie recognized the doctrine of equivalents for what it is, an equitable remedy which is an exception to the

rule that patentees are limited to what they literally claim. Hilton Davis, 62 F.3d at 1550 (Lourie, J., dissenting).

Moreover, Judge Lourie correctly pointed out that in Graver Tank, this Court enumerated many factors beyond and unrelated to the "substantiality of the differences" test which should be considered before a court decides to go beyond the literal meaning of a patent claim and delve into the realm of equity. These other factors included: (1) whether the accused device was the result of copying or independent development; (2) whether those skilled in the art had knowledge of the interchangeability of contested elements; and (3) the pioneer or primary status of the claimed invention. Graver Tank, 339 U.S. at 607-8. As Judge Lourie so keenly recognized, these additional factors go far beyond a determination of the "substantiality or insubstantiality of the differences" between the accused product or process and what is covered by the patent, and unquestionably place the doctrine of equivalents in the realm of "equity." It is clear that this Court in Graver Tank viewed these factors as critical parts of the balancing test which determine where the equities lie when deciding whether the circumstances of the case justify a remedy for the patentee beyond the failed legal remedy.

#### A. Actions Of The Patentee Should Be Considered Before Application Of The Doctrine Of Equivalents.

In addition to the Court's Graver Tank factors, Judge Lourie noted two additional factors which should be considered by courts in their decisions to grant equitable relief where there is no literal infringement. These factors focus on activities of the patentee and include: (1) anything done by the patentee that would impair the ability of the public to reasonably understand from the claims what is being patented; and (2) the failure of the patentee to seek reissue of the original patent to cover the accused embodiment. Hilton Davis, 62 F.3d at 1547 (Lourie, J., dissenting).

Inasmuch as a patent applicant is required by 35 U.S.C. § 112, second paragraph, to conclude the patent specification with "one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention," the only time that the doctrine of equivalents becomes an issue is when the patentee has failed to obtain a claim which is narrow enough to be valid, yet broad enough to be literally infringed. See Winans v. Denmead, 56 U.S. at 347 (Campbell, J., dissenting).

Thus, the underlying assumption in all doctrine of equivalents cases is that the patentee could have, but did not, obtain a claim in the Patent Office which would literally read on the accused product or process. Hilton Davis, 62 F.3d at 1549 (Lourie, J., dissenting). Clearly then, this factor ought to weigh against the patentee and in favor of the public (including the unknowing infringer) in considering whether or not the doctrine of equivalents should even be considered as a remedy.

As Judge Lourie so aptly pointed out in his dissent, the fact that the patentee has not undertaken to have the original patent reissued in order to get claims which more accurately notify the public of what is being claimed, should act as a form of laches. *Id.* Again, this factor should likewise weigh against application of the doctrine of equivalents as it does in all other cases of equity. *See, Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. (5 Otto) 274, 278 (1877); *Merrill v. Yeomans*, 94 U.S. 568, 573 (1876).

Thus, where the patentee has failed to claim the invention under 35 U.S.C. § 112 as well as he should have and to avail himself of the benefits of 35 U.S.C. § 252 to correct that problem, the patentee should bear some accountability for the dilemma he creates for the public, which will not know from the patent claims exactly what is covered by the patent. Merrill v. Yeomans 94 U.S. at 573. This factor weighs against application of the doctrine since there is a

compelling public interest to permit industry and those skilled in the art to operate with some degree of certainty, particularly in making decisions about investments in new products and other developments. It is imperative that businesses have a sense of security to operate and develop their activities without the chilling effect of a potential megajury verdict for infringement of a patent claim that was never literally infringed and of which it had no prior notice.<sup>5</sup>

Another factor which should be placed in the balance is consideration of the time at which the accused infringer becomes aware of the infringement. In many instances, the alleged infringer may become aware of his liability for infringing a claim (not previously examined by the Patent Office) long after this infringement has begun. The alleged infringer has no way of knowing he is in trouble until the patentee finally gets around to bringing suit, and the court decides to apply the doctrine of equivalents to find infringement. Again, since the patentee made the decision not to return to the Patent Office to seek reissue, this factor as another form of laches, should weigh against going beyond the literal claims to afford the patentee a remedy. The delay

<sup>&</sup>lt;sup>5</sup>Indeed Justice Black appreciated this dilemma for the public, when, in his *Graver Tank* dissent he expressed the following concern:

The Court's ruling today sets the stage for more patent "fraud" and "piracy" against business than could be expected from faithful observance of the congressionally enacted plan to protect business against judicial expansion of precise patent claims. Hereafter a manufacturer cannot rely on what the language of a patent claims. He must be able, at the peril of heavy infringement damages, to forecast how far a court relatively unversed in a particular technological field will expand the claim's language after considering the testimony of technical experts in that field. To burden business enterprise on the assumption that men possess such a prescience bodes ill for the kind of competitive economy that is our professed goal.

was occasioned by the patentee and it should not inure to his benefit.

B. The Doctrine Of Equivalents Is But A Substitute For A Reissue Which Is Itself An Equitable Remedy.

As early as 1881, this Court recognized the reissuance of a patent pursuant to § 2526 of the current Patent Act (and its predecessor statutes) to be an equitable remedy, in exchange for which the patentee had to show that he had proceeded with "due diligence" and without "unreasonable delay" if the goal was to broaden the patent claims. Miller v.

The surrender of the original patent shall take effect upon the issue of the reissued patent, and every reissued patent shall have the same effect and operation in law, on the trial of actions for causes thereafter arising, as if the same have been originally granted in such amended form, but insofar as the claims or the original and reissued patents are identical, such surrender shall not affect any action then pending nor abate any cause of action then existing, and the reissued patent, to the extent that its claims are identical with the original patent, shall constitute a continuation thereof and have effect continuously from the date of the original patent.

No reissued patent shall abridge or affect the right of any person or his successors in business who made, purchased or used prior to the grant of a reissue anything patented by the reissued patent, to continue the use of, or to sell to others to be used or sold, the specific thing so made, purchased or used, unless the making, using or selling of such thing infringes a valid claim of the reissued patent which was in the original patent. The court before which such matter is in question may provide for the continued manufacture, use or sale of the thing made, purchased or used as specified, or for the manufacture, use or sale of which substantial preparation was made before the grant of the reissue, and it may also provide for the continued practice of any process patented by the reissue, practiced, or for the practice of which substantial preparation was made, prior to the grant of the reissue, to the extent and under such terms as the court deems equitable for the protection of investments made or business commenced before the grant of the reissue.

Bridgeport Brass Co., 104 U.S. (14 Otto) 350, 352 (1881). Noting that where a specific device or combination is claimed in a patent, the public has a right to rely on the "implied disclaimer" of all that is omitted from the claims, the Miller Court held that:

This legal effect of the patent cannot be revoked unless the patentee surrenders it and proves that the specification was framed by real inadvertence, accident, or mistake, without any fraudulent or deceptive intention on his part; and this should be done with all due diligence and speed. Any unnecessary laches or delay in a matter thus apparent on the record affects the right to alter or reissue the patent for such cause.

Id. at 352 (emphasis added).

Without question, the issuance of a reissue patent, like reformation of a contract, is an equitable remedy which benefits the patentee by permitting it to claim something other than that which was literally claimed in the original patent. Furthermore, the Miller Court went to great lengths to convey that the whole intent behind the reissue statute is to grant to the patentee that which "ought to have been done" in the first instance. Camp. 229 U.S. at 559. The Court's use of terms such as "due diligence," "laches," "inadvertence," "mistake," "slept upon his rights" to describe the conduct of the patentee and "reliance" in connection with the public's conduct, clearly places the reissue proceeding in "equity." Miller, 104 U.S. at 352-6. Moreover, the Miller Court was careful to characterize the level of conduct by a patentee which would justify the broadening of claims in a reissue, to be "a real bona fide mistake, inadvertently committed; such as a Court of Chancery, in cases within its ordinary jurisdiction, would correct." Id. at 355.

<sup>&</sup>lt;sup>6</sup>Section 252 of the patent statute provides that:

Such characterization squarely places this relief as well in the realm of "equity."

That there is a clear analogy between the doctrine of equivalents and the reissue procedure appears self evident. Nevertheless, this relationship was expressly acknowledged by Justice Hugo Black in his dissent to this Court's Graver Tank decision. Although disagreeing with this Court's application of the doctrine of equivalents, Justice Black recognized that the doctrine could and would be used as a way to contravene the Court's imposition of a two year limitation to broaden claims in a reissue patent. Graver Tank, 339 U.S. at 616.9

C. Both Statutes And Case Law Require That The Relief Available For Infringement By Equivalents Should Involve The Same Equitable Considerations That Apply To Infringement Of A Reissue Patent.

Inasmuch as the doctrine of equivalents, like the provisions for reissuing patents, is clearly an equitable remedy, any relief granted to the patentee thereunder should be based on the traditional equitable principles, such as those which would have been considered by the early Court of Chancery. Graver Tank, 339 U.S. at 607-9; Miller, 104 U.S. at 355. 10

Thus, the same factors which the Graver Tank Court enumerated as being appropriate for inquiry to determine if the doctrine of equivalents should apply at all should likewise be considered in fashioning any relief for the patentee. As was previously noted, the importance of these factors was recognized and appreciated by Judge Lourie; yet, their significance was lost on the majority in Hilton Davis.

Moreover, the Legislature has provided for amendment or correction of the claims in a patent through the reissue process. This same type of claim correction is accomplished by the court in equity when infringement is found by the doctrine of equivalents. The Legislature has further provided that when patent claims are changed during reissue, relief for infringement would be controlled by equitable considerations, both as to past and future infringement.<sup>11</sup>

<sup>&</sup>lt;sup>7</sup>Again, the analogy to contract reformation is apparent since the patentee in a reissue proceeding is able to return to the government and get claims to cover his entire invention. The patentee must, however, establish that the equities are in his favor (i.e., no unreasonable delay, fraud, etc.), and that he is entitled to the claims sought.

In addition to pointing out the analogy between the doctrine of equivalents and the reissue procedure, Justice Black noted his concern that the doctrine of equivalents would permit a patentee to broaden his claims even beyond what might be considered a reasonable period. Miller, 104 U.S. at 350 (the Court found the period of time to be unreasonably long for patentee to return to the Patent Office to broaden claims). Graver Tank, 339 U.S. at 615 (Black J., dissenting). Moreover, Justice Black even suggested that patentees would be wise to simply bypass the reissue procedure and await the day when courts would enlarge the claims under the doctrine of equivalents, without regard to the passage of time. Id. at 616.

<sup>&</sup>lt;sup>9</sup> Justice Black feared that: "One need not be a prophet to suggest that today's rhapsody on the virtue of the 'doctrine of equivalents' will, in direct contravention of the *Miller* case *supra*, make enlargement of patent claims the 'rule' rather than the 'exception.' " *Graver Tank*, 339 U.S. at 616 (*Black J., dissenting*).

<sup>&</sup>lt;sup>10</sup> Although not binding on this Court, the Seventh Circuit's opinion in the Union Carbide Corp. v. Graver Tank & Mfg. Co., Inc., 196 F.2d 103 (7th Cir. 1952), cert. denied, 343 U.S. 967 (1952), reh'g denied, 344 U.S. 849 (1952) (case involved the damages issues, including the issue of willful infringement) is enlightening as to the equities which should be weighed in fashioning a remedy where infringement is proven by the doctrine of equivalents.

<sup>11</sup> See, footnote 6, supra.

The first sentence of the second paragraph of section 252 provides absolute freedom from liability for any infringement which took place before the claims were changed, and the second sentence provides for continued freedom on equitable terms. To be sure, the Legislature could not have made it more explicit that it was providing for equitable relief when it provided that "[t]he court...may also provide for the continued manufacture...and...continued practice of any process patented by the reissue...under such terms as the court deems equitable...". (emphasis added). Therefore, a patentee should not be permitted to avoid the Legislative imposition of equitable relief by waiting to invoke the doctrine of equivalents in litigation.

Furthermore, it is generally the patentee that controls the timing of the infringement action and, thus, the timing of application of the doctrine of equivalents. It would therefore seem equitable that the accused infringer be afforded the benefit of similar "intervening rights" as those provided in § 252 for a reissued patent. Equity compels this result. There can be no justification for placing a patentee who is aware of an infringement, and yet waits to rely on the doctrine of equivalents, in a better position than one who takes the reissue route. At least with the reissue, the public is notified of broader claims within two years of the date of the original patent. In the latter instance, the public is put on notice of the change in patent claims. Clearly, Justice Black appreciated the value of early notice to the public and of the examination of claims by the Patent Office instead of

the courts. Graver Tank, 339 U.S. at 617 (Black, J., dissenting). And, even though Justice Black was expressing a minority view, there can be no doubt that the majority in Graver Tank intended to strike an equitable balance between the patentee and the public.

#### CONCLUSION

For the foregoing reasons, amici request that this Court reverse the Federal Circuit's decision and, in so doing, reaffirm its *Graver Tank* holding that the doctrine of equivalents acts in equity to do "that which ought to be done." *Camp*, 229 U.S. at 559.

Respectfully submitted,

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<sup>12</sup> See, footnote 6, supra.

<sup>13</sup> See, footnote 6, supra.

<sup>&</sup>lt;sup>14</sup>Section 251, 4th paragraph, of the patent statute provides that: "No reissued patent shall be granted enlarging the scope of the claims of the original patent unless applied for within two years from the grant of the original patent."

(6)

No. 95-728

FILED

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## Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner.

V.

HILTON DAVIS CHEMICAL CO., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF AMICUS CURIAE OF INTELLECTUAL PROPERTY OWNERS IN SUPPORT OF PETITIONER

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#### TABLE OF CONTENTS

	Page
TABLE OF AUTHORITIES	iii
INTEREST OF AMICUS CURIAE	. 1
INTRODUCTION AND SUMMARY OF ARGU-	3
ARGUMENT	. 5
I. A PATENT IS INFRINGED WITHIN THE MEANING OF 35 U.S.C. § 271 WHEN A PARTY "MAKES, USES OR SELLS" A DE- VICE OR METHOD THAT DOES NOT DIFFER FROM THE PATENTED INVEN- TION IN ANY SUBSTANTIAL WAY	
A. The Doctrine Of Equivalents Developed In Conjunction With The Statutory Claiming Requirement As An Aid To Construing The Scope And Meaning Of Patent Claims	CONCE
B. The 1952 Patent Act Made No Change In The Law Of Infringement And Left The Doctrine Of Equivalents Intact	
II. THE SCOPE OF AN INVENTION SHOULD BE DETERMINED BY THE SAME OBJEC- TIVE FACTORS USED TO CONSTRUE CLAIMS IN ANY LITERAL INFRINGEMENT ANALYSIS	
A. Undue Reliance On, And A Wooden Application Of, The Function-Way-Result Test Has Led To Unpredictable Results	
B. A Determination Of Equivalence Should Be Based On (1) The Clarity And Breadth Of The Claim Language; (2) The Prosecution History; (3) The Prior Art And The Invention's Status Within That Art; And (4) The Existence Of Obvious Substitutes	

		TABLE OF CONTENTS—Continued	
			Page
60	G · ·	<ol> <li>Clarity and breadth of the claim lan- guage should be a significant guide to determining equivalence</li> </ol>	19
		2. Prosecution history estoppel is a vital public basis for determining the proper scope of the invention	20
		3. Prior art limitations restrict the sweep of the patent claims	22
		4. Obvious substitutes must be included within the equivalence analysis	23
		5. Intent of the infringer is irrelevant to determining liability	25
ij.	C.	In A Jury Trial, The Judge Should Determine The Scope Of The Invention	26
CON	ACLII	SION	29

TABLE OF AU	UTHORITIES
-------------	------------

A	SES	Page
	Aro Mfg. Co. V. Convertible Top Replacement Co.,	
		11, 12
	Autogiro Co. of Am. v. United States, 384 F.2d 391	
	(Ct. Cl. 1967), cert. denied, 434 U.S. 1051	
		5, 7, 19
	Belding Mfg. Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894)	8
	Burr V. Duryee, 68 U.S. (1 Wall.) 531 (1864)	9
	Case V. Brown, 69 U.S. (2 Wall.) 320 (1864)	8
	Claude Neon Lights, Inc. v. E. Machlett & Son, 36	
	F.2d 574 (2d Cir. 1929), cert. denied, 281 U.S.	
	741 (1000)	17
	Clough V. Barker, 106 U.S. 166 (1882)	24
	Computing Scale Co. of Am. V. Automatic Scale	-
	Co., 204 U.S. 609 (1907)	22
		20
	Continental Paper Bag Co. V. Eastern Paper Bag	00
	Co., 210 U.S. 405 (1908)	23
	The Corn-Planter Patent, 90 U.S. (23 Wall.) 181 (1874)	8
	Coupe V. Royer, 155 U.S. 565 (1895)	8, 27
	Duff v. Sterling Pump Co., 107 U.S. 636 (1882)	8, 23
	Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126 (1942)	9
	Gill v. Wells, 89 U.S. (22 Wall.) 1 (1874)	8
	Gould V. Rees, 82 U.S. (15 Wall.) 187 (1872)	8
	Graham v. John Deere Co., 383 U.S. 1 (1966)	
		26
	Graver Tank & Mfg. Co. V. Linde Air Prods. Co.,	10 04
	339 U.S. 594 (1950)	16, 24
	Halliburton Oil Well Cementing Co. v. Walker,	
	329 U.S. 1 (1946)	4, 13
	Hobbs v. Beach, 180 U.S. 383 (1901)	8
	Imhaeuser V. Buerk, 101 U.S. 647 (1879)	
	Ives V. Hamilton, 92 U.S. 426 (1875)	8
	Keystone Bridge Co. v. Phoeniz Iron Co., 95 U.S.	
		20, 23
	Keystone Driller Co. v. Northwest Eng'g Corp.,	
	294 U.S. 42 (1985)	8, 21
	Machine Co. v. Murphy, 97 U.S. 120 (1877)	8

TABLE OF AUTHORITIES—Continued	
	Page
Markman v. Westview Instruments, Inc., 52 F.3d	
967 (Fed. Cir.), cert. granted, 116 S. Ct. 40 (Sept.	
	18, 26
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(1857)	9
Mercoid Corp. v. Mid-Continent Inv. Co., 320 U.S. 661 (1944)	26
Midlantic Nat'l Bank v. New Jersey Dep't of Envtl.	
Protection, 474 U.S. 494 (1986)	13
Minerals Separation Ltd. V. Butte & Superior Min-	
ing Co., 250 U.S. 336 (1919)20,	22, 24
Roberts v. Ryer, 91 U.S. 150 (1875)	8
Royer V. Schultz Belting Co., 135 U.S. 319 (1890)	8
Sanitary Refrigerator Co. v. Winters, 280 U.S. 30	
(====)	7, 8, 24
Schriber-Schroth Co. v. Cleveland Trust Co., 311	7
U.S. 211 (1940)	8, 21
Sewell v. Jones, 91 U.S. 171 (1875)	8
Seymour v. Osbourne, 78 U.S. (11 Wall.) 516 (1870)	8
Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904)	8
Smith v. Magic City Kennel Club, Inc., 282 U.S. 784 (1931)	21
Square D Co. v. Niagara Frontier Tariff Bureau, Inc., 476 U.S. 409 (1986)	15
Sutter v. Robinson, 119 U.S. 580 (1886)	21
Tyler v. Boston, 74 U.S. (7 Wall.) 327 (1868)	8
Water-Meter Co. v. Desper, 101 U.S. 332 (1879)	11, 19,
White v. Dunbar, 119 U.S. 47 (1886)	10
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904 F.2d 677 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)	
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17 S (17 S)	23, 27

TABLE OF AUTHORITIES—Continued	
STATUTORY, LEGISLATIVE AND REGULATORY AUTHORITIES	Page
35 U.S.C. § 111	6, 26
§ 112	
§ 191	26
§ 271, as amended by Act of Dec. 8, 1994	
Patent Act of July 4, 1836, ch. 356, § 6, 5 Stat. 117 (1836)	9
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(1951)	14
S. Rep. No. 1979, 82d Cong., 2d Sess. (1952), re-	
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MISCELLANEOUS	
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trine of Equivalents in Patent Law: Striving for	
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(1994)	17
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cation of the Doctrine of Equivalents in the	
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(Jan. 1951)	21, 24

## Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC., Petitioner,

HILTON DAVIS CHEMICAL Co.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF AMICUS CURIAE OF INTELLECTUAL PROPERTY OWNERS IN SUPPORT OF PETITIONER

#### INTEREST OF AMICUS CURIAE

The Intellectual Property Owners ("IPO") is a national organization founded in 1972 which represents the interests of owners of intellectual property in the United States. IPO's members currently include nearly 100 large and mid-size companies and more than 300 small businesses, universities, independent inventors, authors, executives and attorneys who own or are interested in patents, trademarks, copyrights and other intellectual property rights. In 1995, IPO members received about 30 percent of the patents issued by the United States Patent and Trademark Office to United States nationals. Members of IPO's Board of Directors, which approved the position set forth in this amicus brief, are listed in the Appendix

to this brief.<sup>1</sup> IPO is a non-profit association exempt from federal income tax under Internal Revenue Code § 501 (c) (6).

Although neither IPO nor any of its members has a direct interest in the outcome of this case, IPO and its members have a substantial interest in the problem this case presents: the lack of certainty in the law on nonliteral patent infringement. IPO's members, as patent owners and assignees themselves, and as participants in technologically competitive industries, frequently must determine the scope of protected patent rights-both their own and others-as they make decisions about developing and protecting new technologies. Unfortunately, modern application of the doctrine of equivalents has made this determination an unduly hazardous enterprise. Consequently, IPO members are unable to predict with any reasonable degree of certainty the potential legal significance of technological innovations or improvements or the risk of liability associated with developing new products.

IPO does not believe that the proper judicial response to the problems that modern patent law has spawned lies in abandoning the equivalents doctrine wholesale. Indeed, this course of action is foreclosed by Congress's ratification of the longstanding doctrine when, in 1952, Congress reenacted without change the law of infringement. IPO, however, believes that the doctrine needs to be returned to its original roots as a means of protecting the rights of patentees by condemning insubstantial deviations from the patent claims. IPO also believes that consistency in the application of the doctrine—and the legal and economic certainty such consistency provides—can be achieved only if the doctrine is once again employed as a part of patent claim construction by the courts, based on objective factors such as the

prosecution history and prior art. As the result in this case demonstrates, predictability and consistency simply cannot be expected if equivalence determinations are based on lay juries' unguided assessments of the substantiality of differences between the literal requirements of patents and accused devices or methods. By returning the doctrine to its original scope and role, intellectual property rights will retain comprehensive legal protection, which Congress clearly intended, but competitors will be able to measure those rights more precisely and with less risk of a post hoc, layman's determination that there has been a violation of the patent's claims.

#### INTRODUCTION AND SUMMARY OF ARGUMENT

Section 271(a) of Title 35 defines infringement as the unauthorized making, using or selling of "any patented invention." 35 U.S.C. § 271(a), as amended by Act of Dec. 8, 1994. IPO disagrees with the suggestion, made by petitioner in its petition for a writ of certiorari ("Pet."), that the doctrine of equivalents is an "extra statutory" "second cause of action for infringement" (Pet. 28, 17) that is "inconsistent not only with the text of the Patent Act but with well-established statutory policy as well." Id. at 22. To the contrary, the doctrine is a longstanding and congressionally accepted method of determining whether an accused infringer is in fact making, using or selling a "patented invention."

The doctrine of equivalents developed in conjunction with the statutory requirement that patents include claims that particularly point out and distinctly claim the subject matter of the invention and is entirely consistent with this "claiming" requirement. As developed by this Court, the doctrine fully protects patent claims, but prohibits expansion of the scope of the patented invention. When Congress added § 271(a)'s proscription of infringement in the 1952 Patent Act, it left this century-old doctrine and its role in determining direct infringement completely undisturbed.

<sup>&</sup>lt;sup>1</sup> Pursuant to Rule 37.3 of the Rules of this Court, letters of consent to the filing of this brief have been filed with the Clerk of the Court.

Indeed, Congress evinced its awareness and endorsement of the doctrine in § 112 of the 1952 Patent Act. In that provision, Congress authorized the granting of patent claims that recite an element in a combination as an unspecified "means or step" for performing a function, without any recital of the structure, material or acts that support those means or steps. 35 U.S.C. § 112, ¶ 6. Overruling this Court's decision in Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946), that such claims were impermissibly vague, Congress provided that a claim employing such open-ended language "shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof." 35 U.S.C. § 112, ¶ 6 (emphasis added). Congress thus expressly recognized that "equivalence" is a proper part of construing claim language. It would be improper to hold that Congress endorsed the doctrine of equivalents for the construction of facially vague claim language, yet (without a single indication that it was doing so) eliminated the doctrine's century long role in construing all other claims.

IPO does agree with petitioner, however, that modern application of this longstanding doctrine has engendered uncertainty that undermines the congressional and constitutional purposes underlying the patent laws. The solution to these problems lies not in abandoning the doctrine, however, but in making its application, both substantively and procedurally, more certain. Substantively, the doctrine's historical origins as a measure of the protected rights of the patentee make clear that determinations of equivalence should be governed by the same objective considerations that govern claim construction. Thus, the determination of whether a variation from the literal requirements of a claim is substantial or insubstantial must be made with the understanding of one of ordinary skill in the relevant art in light of the breadth and clarity of the claim language, the specification, the patent prosecution history, the prior art (and the patent's status within it), and the obviousness of substituting the accused element for that recited in the claim. Procedurally, like the question of claim construction itself, the determination of equivalence ordinarily should be made by a court, not by a jury.

In order to bring the same level of certainty to determinations of equivalence that inheres in any "literal" infringement analysis, subjective factors that do not bear on the scope of the invention itself, such as the motivation of an accused infringer, should play no role. Only by excluding subjective factors can both patent holders and inventors seeking to avoid infringement determine how to proceed based on readily available, objective information. Such a rule is also consistent with the historical development of the doctrine of equivalents as a mode of claim construction, rather than an equitable remedy. Thus, while intent may be a relevant consideration in assessing the proper level of damages, it is irrelevant to a determination of liability.

#### ARGUMENT

I. A PATENT IS INFRINGED WITHIN THE MEAN-ING OF 35 U.S.C. § 271 WHEN A PARTY "MAKES, USES OR SELLS" A DEVICE OR METHOD THAT DOES NOT DIFFER FROM THE PATENTED IN-VENTION IN ANY SUBSTANTIAL WAY.

Petitioner suggests in its petition that the doctrine of equivalents is an "extra statutory" "second cause of action for infringement." Pet. 28, 17. First added to the patent laws in 1952, and subsequently amended in 1994, § 271(a) defines infringement as follows:

Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent.

35 U.S.C. § 271(a). The statute does not, by its express terms, proscribe only "literal" infringement, nor does it prohibit merely the infringement of "patent claims." Indeed, as the majority below noted (Pet. 22), § 271(a) does not mention patent "claims" at all. Similarly, the statute does not, by its terms, foreclose infringement by equivalents, despite the fact that the doctrine was well established prior to 1952.

In asserting that infringement by equivalents nevertheless falls outside the prohibition of § 271(a), petitioner relies on the statutory requirements that each patent application include a "specification" (35 U.S.C. § 111), and that each such specification "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. Because the claims define the "patented invention," petitioner suggests that infringement occurs only where the unauthorized manufacture, use, or sale of a "patented invention" satisfies the literal requirements of the claims. Thus, petitioner argues, the doctrine of equivalents provides protection "for more than is set forth in the claims." Pet. 22.

The suggestion that the doctrine of equivalents is inconsistent with the "claiming requirement" of § 112 is historically inaccurate, and rests on the mistaken assumption that patent claims always have clear and unequivocal "literal" meanings that the doctrine is used to "expand." Inventions often involve complex technical concepts that typically "exist[] most importantly as a tangible structure or a series of drawings," (Autogiro Co. of Am. v. United States, 384 F.2d 391, 397 (Ct. Cl. 1967), cert. denied, 434 U.S. 1051 (1978)), and the claims that attempt to capture these concepts are drafted against a backdrop of prior art in the field of technology to which they relate. As a result, the meaning and scope of patent claims is derived through a process of claim "construction" not dissimilar to judicial construction of statutes, and indeed

"the inability of words to achieve precision is . . . more acute with claims" than it is with statutes. *Id.* at 398.

Given the often unavoidable ambiguity of claim language, the necessity of construing claims has existed since Congress introduced the requirement of patent claims in 1836. The doctrine of equivalents, which has the same historical lineage, developed as part of this process of claim construction and, properly understood and applied, relies on essentially the same interpretive tools that are employed in determining literal infringement. It is clear that in the 1952 Patent Act passed a century later, Congress left the doctrine of equivalents, and its essential role in construing patent claims, undisturbed.

A. The Doctrine Of Equivalents Developed In Conjunction With The Statutory Claiming Requirement As An Aid To Construing The Scope And Meaning Of Patent Claims.

More often than not, a defendant in a patent infringement suit will point to some difference between its method or device and the patent claims and the question will arise: "is that difference substantial?" The doctrine of equivalents is nothing more or less than the tool developed by the judiciary to answer this basic question. Cognizant of the limits of verbalism (particularly in the area of scientific endeavor), this Court developed the doctrine "to benefit the inventor's genius and not the scrivener's talents" (Autogiro, 384 F.2d at 399), and thereby to prevent the elevation of form over substance. The doctrine is thus predicated on the recognition "that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself." Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) (quoting Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)).

Consistent with these intellectual underpinnings, the doctrine developed not as an equitable remedy that allowed courts to reform or amend patent claims, but

rather as a way of construing claims to determine their proper scope and meaning. Beginning with its first recognition of the doctrine in the 1853 decision of Winans v. Denmead, 56 U.S. (15 How.) 330 (1853), this Court has viewed equivalence as a determination of whether a "claim . . . can fairly be construed" as encompassing a particular accused element or process. Id. at 341. The doctrine is thus an aid in determining "the fair meaning of [the claim's] language when taken in connection with the whole specification," and a finding of equivalence reflects the determination that "[a] literal construction is not to be adopted [because] it would be repugnant to the manifest sense and reason of the instrument." The Corn-Planter Patent, 90 U.S. (23 Wall.) 181, 221 (1874); see also Hobbs v. Beach, 180 U.S. 383, 400 (1901) ("another construction, which would limit these words to the exact mechanism described in the patent, would be so obviously unjust that no court could be expected to adopt it").

From the time of the Winans decision until the passage of the 1952 Patent Act, this Court repeatedly applied the doctrine, both to uphold and reject claims of infringement.<sup>2</sup> The suggestion that this Court adopted the

doctrine prior to the enactment of a statutory claiming requirement (Pet. 27), and then thoughtlessly perpetuated the doctrine despite a fundamental change in the statutory regime governing patent drafting, is historically inaccurate.<sup>3</sup> The requirement that patents include claims that specify the scope of an invention dates not from the Patent Act of 1870, but, as this Court long ago recognized, from language first added to the patent statute in 1836. "[S]ince the act of 1836, the patent laws require that an applicant for a patent shall not only, by a specification in writing, fully explain his invention, but that he 'shall particularly specify and point out . . . his own invention or discovery." Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. 274, 278 (1877). The 1870 statute's requirement that the inventor "particularly point out and

<sup>2</sup> See, e.g., Graver Tank & Mfg. Co. V. Linde Air Prods. Co., 339 U.S. 605 (1950); Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211 (1940); Keystone Driller Co. v. Northwest Eng'g Corp., 294 U.S. 42 (1935); Sanitary Refrigerator Co. v. Winters, 280 U.S. 30 (1929); Singer Mfg. Co. v. Cramer, 192 U.S. 265 (1904); Coupe v. Royer, 155 U.S. 565 (1895); Belding Mfg. Co. v. Challenge Corn Planter Co., 152 U.S. 100 (1894); Royer V. Schultz Belting Co., 135 U.S. 319 (1890); Duff v. Sterling Pump Co., 107 U.S. 636 (1882); Imhaeuser v. Buerk, 101 U.S. 647 (1879); Machine Co. v. Murphy, 97 U.S. 120, 125 (1877); Ives v. Hamilton, 92 U.S. 426 (1875); Sewell v. Jones, 91 U.S. 171 (1875); Roberts v. Ryer, 91 U.S. 150 (1875); The Corn-Planter Patent, 90 U.S. (23 Wall.) 181 (1874); Gill v. Wells, 89 U.S. (22 Wal.) 1 (1874); Gould v. Rees. 82 U.S. (15 Wall.) 187 (1872); Seymour V. Osbourne, 78 U.S. (11 Wall.) 516 (1870); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868); Case v. Brown, 69 U.S. (2 Wall.) 320 (1864);

Burr v. Duryee, 68 U.S. (1 Wall.) 531 (1863); McCormick v. Talcott, 61 U.S. (20 How.) 402 (1857).

<sup>&</sup>lt;sup>3</sup> In fact, well over 50 years ago this Court was asked to find that the doctrine of equivalents was "incompatible with the statutory requirements for the grant of a patent." Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 131-32 (1942). The Court specifically declined to address this contention (id. at 136), and continued to apply the doctrine. See, e.g., Graver Tank, 339 U.S. 605.

<sup>&</sup>lt;sup>4</sup> The 1836 Patent Act stated, in relevant part:

<sup>[</sup>A]ny person or persons having discovered or invented . . . any new and useful improvement . . . may make application in writing to the Commissioner of Patents. . . . But before any inventor shall receive a patent for any such new invention or discovery, he shall deliver a written description of his invention or discovery . . . in such full, clear, and exact terms, avoiding unnecessary prolixity, as to enable any person skilled in the art or science to which it appertains . . . to make, construct, compound, and use the same; and in case of any machine, he shall fully explain the principle and the several modes in which he has contemplated the application of that principle . . .; and shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery.

Patent Act of July 4, 1836, ch. 356, § 6, 5 Stat. 117, 119 (1836) (emphasis added).

distinctly claim the part, improvement, or combination which he claims as his invention or discovery," Act of July 8, 1870, ch. 230, § 26, 16 Stat. 198, 201 (1870), is essentially the same as the requirement set forth in its 1836 predecessor. See John W. Schlicher, Patent Law: Legal and Economic Principles § 7.04[5], at 7-44 (1995) ("After 1870, the form of patent claims did not change dramatically."). The modern claiming requirement is consistent with both the 1836 and 1870 statutes: "The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112.

Thus, as propounded by this Court, the doctrine of equivalents has always co-existed with the requirement that patents include claims that specify the scope of an invention, and has developed as an integral aspect in construing the scope and meaning of such claims. Prior to

The propositions submitted by the committee are few, clear, definite, and precise in their language....

The committee have also considered the effect of the proposed revision upon all existing legal rights, and . . . they have carefully preserved every existing right. . . . That is the principle by which the committee has been governed in offering amendments to the bill and also in considering the report of the commissioners of revision. Their object has been, not to disturb any existing rights or to take away any remedies, but to enlarge the remedies in every case where they could do so consistently with the principle of the law.

Cong. Globe, 41st Cong., 2d Sess. 2854 (1870).

the 1952 Patent Act, infringement by equivalents was an established and well developed basis of patent infringement supported by a substantial body of case law. It is indisputably clear that Congress did not in any way disturb this well-settled doctrine when, in 1952, it made the ministerial change in the patent laws that added § 271(a).

#### B. The 1952 Patent Act Made No Change In The Law Of Infringement And Left The Doctrine Of Equivalents Intact.

Section 271(a) of Title 35 U.S.C. was first added to the statute by the Patent Act of 1952, ch. 950, 66 Stat. 811. In adding this provision, Congress did not eliminate, narrow or otherwise change the doctrine of equivalents or in any way disapprove the longstanding principle it reflects—that, properly construed, patents encompass devices or methods that differ from the claims in only insubstantial ways. To the contrary, as this Court noted in Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336 (1961), section 271(a) "left intact the entire body of case law on direct infringement" (id. at 342) and in fact was nothing more than a "'declaratory'" provision "adopted 'for completeness.' " Id. at 342 n.8 (quoting the reviser's notes, 35 U.S.C.A., following § 271, and Federico, Commentary on the New Patent Act, 35 U.S.C.A., preceding § 1, at p. 51). Justice Black, a dissenter in Graver Tank, agreed, stating:

<sup>&</sup>lt;sup>5</sup> Additionally, there is no support in the legislative history of the 1870 statute for petitioner's suggestion that Congress fundamentally changed the U.S. patent law from a "central claiming" system to a "peripheral claiming" system. Pet. 27 n.25. During House debates on the 1870 bill, which was reported from the Committee on Patents, a Committee member stated:

<sup>&</sup>lt;sup>6</sup> Of course, in some cases claim language is so clear and unambiguous that it forecloses infringement by equivalents. See, e.g., Keystone Bridge, 95 U.S. 274; White v. Dunbar, 119 U.S. 47 (1886). While both decisions are frequently cited by those seeking

to cast doubt on the doctrine (see Pet. 24; Brief for United States as Amicus Curiae, Standard Indus. v. Tigrett Indus., No. 445 (October Term 1969) 8, 10, 21 (cited in Pet. 18)), it was the clarity of the claim language, and not any renunciation or disparagement of the doctrine of equivalents, that accounts for the decisions. Indeed, the author of both decisions, Justice Bradley, applied the doctrine in cases subsequent to Keystone Bridge. See Water-Meter Co. v. Desper, 101 U.S. 332, 337 (1879) ("We can only decide whether any part omitted by an alleged infringer is supplied by some other device or instrumentality which is its equivalent. We think no such equivalent is supplied in this case.").

<sup>&</sup>lt;sup>7</sup> The Court referred to "direct" infringement only to distinguish it from "contributory" infringement, which was also at issue in

If anyone is inclined despite other evidence to the contrary to attribute to Congress a purpose to accomplish any far-reaching changes in the substantive law by this [1952] enactment, he should take note that just before the bill was passed in the Senate, Senator Saltonstall asked on the floor, 'Does the bill change the law in any way or only codify the present patent laws?' Senator McCarran, Chairman of the Judiciary Committee which had been in charge of the bill for the Senate, replied, 'It codifies the present patent laws.'

Aro Mfg., 365 U.S. at 347 n.2 (Black, J., concurring) (quoting 98 Cong. Rec. 9323 (July 4, 1952)).

The Senate Report accompanying the bill explained that the 1952 Act made only two "major" changes in the patent laws—"incorporating a requirement for invention in § 103 and the judicial doctrine of contributory infringement in § 271." S. Rep. No. 1979, 82d Cong., 2d Sess. (1952), reprinted in 1952 U.S.C.C.A.N. 2394, 2397. Contemporary analyses agreed with this Court that the 1952 Act, including § 271(a), worked no change in the law of infringement. See, e.g., Giles S. Rich, Infringement Under Section 271 of the Patent Act of 1952, 35 J. Pat. Off. Soc'y 476, 491 (July 1953) (§ 271(a) "is present only for the sake of completeness. We got along without it for 162 years and we could again"); Dean O. S. Colclough, A New Patent Act—But the Same Basic Problem, 35 J. Pat. Off. Soc'y 501, 508 (July 1953) ("from a careful reading of the 1952 Act. [it may be said] that Congress has not changed the law basically"). It is simply inconceivable that, without mentioning that it was doing so, Congress swept aside a century of this Court's decisions defining infringement by

equivalents. See Midlantic Nat'l Bank v. New Jersey Dept. of Envtl. Protection, 474 U.S. 494, 501 (1986) ("The normal rule of statutory construction is that if Congress intends for legislation to change the interpretation of a judicially created concept, it makes that intent specific."). Indeed, there is not a shred of evidence that Congress intended to bar only literal duplication of patented devices or methods, and to strip patentees of protection against accused devices or methods that differ in merely colorable but not substantial ways.

Nor can such a fundamental change in the law of infringement be derived from the fact that Congress added the concept of equivalents to § 112 as a basis for sustaining previously unsustainable "means" claims—i.e., those that simply state "means for performing" a specified function. In fact, if § 112 proves anything, it is that Congress was aware of, and endorsed, the doctrine of equivalents. Section 112, ¶ 6 provides:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6 (emphasis added). The purpose of this provision was to restore to patent holders the ability to use broad "means plus function" language in their claims, which this Court had condemned as unduly vague in Halliburton Oil Well Cementing Co. v. Walker, 329

the case. See Aro Mfg., 365 U.S. at 341-42; see also Giles S. Rich, Infringement Under Section 271 of the Patent Act of 1952, 35 J. Pat. Off. Soc'y 476, 491 (July 1953) (§ 271(a) "defines direct infringement"); cf. 35 U.S.C. § 271(d) (patent holder entitled to relief for "infringement or contributory infringement").

<sup>&</sup>lt;sup>8</sup> If, as some suggest, the doctrine was controversial at the time of the 1952 Act (see Pet. App. 102a n.9 (Nies, J., dissenting) (quoting Department of Justice statement during House hearings on the legislation)), it is all the more implausible that Congress resolved the controversy without uttering a single word on the subject.

<sup>&</sup>lt;sup>9</sup> Cf. Pet. 14; Pet. App. 102a-103a.

U.S. 1 (1946). In so doing, Congress did not cabin the doctrine of equivalents to this single category of previously impermissible patent claims. Rather, it extended the doctrine's application to an entirely new area. Before § 112, ¶ 6, the doctrine had been used only to determine whether an accused device or process was equivalent to claim elements; in order to save open-ended claim language from undue vagueness, § 112, ¶ 6 extended the doctrine to a determination of whether an accused device or process was equivalent not to a claim element, but to the "structure, material, or acts described in the specification."

This statutory provision thus demonstrates that Congress was well aware of the doctrine of equivalents and its role in construing claim language, and adapted the doctrine to a new purpose: salvaging vague claim language by extending the consideration of equivalents to acts or devices disclosed in specifications. There simply is no basis for concluding that, by affording this new protection to patentees, Congress sub silentio stripped inventors of protection against the appropriation of their inventions through insubstantial changes. A contrary conclusion, moreover, would lead to the perverse result that patentees who employ the vaguest claim language would be afforded the benefits of the doctrine of equivalents, while those who attempt particularly to point out and distinctly to claim their inventions (as well as those who employ

single element claims) are deprived of the doctrine's benefits. Such a result cannot be sustained in the absence of any evidence that Congress intended it.

Finally, advocates for the abolition of the doctrine of equivalents argue that it defeats the notice purposes of the claiming requirement. The short answer is that this policy argument provides no basis for eliminating a judicial construction of a statute that Congress left undisturbed in both 1952 and 42 years later when it amended § 271(a).11 See Square D. Co. v. Niagara Frontier Tariff Bureau, Inc., 476 U.S. 409, 419, 421-22 (1986) (upholding "continued viability" of prior case law that "represents a longstanding statutory construction that Congres has consistently refused to disturb, even when revisiting this specific area of law"). The more complete answer, discussed below, is that it is not the doctrine of equivalents itself, but its modern application by juries, that has undermined the goal of providing notice to the world of where the boundaries of patents lie. This is a problem this Court can and should address, by confining the doctrine to its original purpose.

# II. THE SCOPE OF AN INVENTION SHOULD BE DETERMINED BY THE SAME OBJECTIVE FACTORS USED TO CONSTRUE CLAIMS IN ANY LITERAL INFRINGEMENT ANALYSIS.

The doctrine of equivalents, borne from the necessity to provide full protection to inventors, has not been applied in a clear and consistent manner. In large measure this confusion has arisen because lower courts have departed from this Court's carefully drawn standards for

Before Subcomm. No. 3 of the Comm. on the Judiciary, 82d Cong., 1st Sess. 45 (1951) (Report of the Laws and Rules Comm. of the American Patent Law Ass'n on H.R. 3780, 82d Cong.) ("[s]ection 112 in the last paragraph recognizes the validity of combination claims wherein the novelty is expressed in functional terms and . . . offset[s] the much criticized theory of the Halliburton case"). See also Clarence B. Des Jardins, The Year 1952 and the Patent and Trade-Mark Law, 35 J. Pat. Off. Soc'y 517, 529 (July 1953) (§ 112 "is a statutory overruling of the Halliburton case").

<sup>11</sup> The 1994 amendment added the following language to § 271(a): "Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor, infringes the patent." 35 U.S.C. § 271a (emphases added).

determining equivalence and substituted a simple incantation of "function-way-result." The majority below correctly rejected the function-way-result test as the only proper determinant of equivalence, and properly identified "substantiality" as the appropriate focus. The majority erred, however, in not tying the determination of substantiality to the factors that governed such judgments prior to 1952. These factors, all of which must be viewed from the perspective of one of ordinary skill in the relevant art, are the clarity and breadth of the claim language, the specification, the patent prosecution history, the prior art, and the obviousness of the substitution. The majority below further erred in vesting responsibility for such determinations with juries, rather than courts. Under the proper test, it is clear that the judgment below must be reversed.

#### A. Undue Reliance On, And A Wooden Application Of, The Function-Way-Result Test Has Led To Unpredictable Results.

In its oft-cited decision in Graver Tank, this Court upheld a finding of equivalence based on "the disclosures of the prior art," the fact that "[s]pecialists . . . understood that manganese was equivalent to and could be substituted for magnesium in the composition of the patented" process, and the testimony of experts in the field that, "'in the sense of the patent' manganese could be included" within the scope of the patent's terms. 339 U.S. at 611-12 (citation omitted). In the years following this decision, however, this careful consideration of such factors was ignored in favor of the Court's pithy recitation of the so-called "function-way-result" test. Used as a shorthand in Graver Tank, the test took on a life of its own, but has proved to be largely inadequate as a methodology for determining the scope of an invention. For example, as Judge Lourie pointed out in his dissent below, "one normally knows why each electronic or mechanical element is present in a product and what it does." Pet. App. 74a (Lourie, J., dissenting). By contrast:

New chemical compounds differ structurally from old compounds (that is what makes them new) and yet they may perform the same function (have the same use), provide the same result, and do so in the same way. The fact that they do so in the same way does not make them substantially the same in the way they are defined, *i.e.*, by structure.

Id. at 73a. Judge Lourie's illustration indicates that the function-way-result test has been overextended as applied beyond simple mechanical or electrical structures and processes.<sup>12</sup>

In fact, the function-way-result test, something of an anachronism in a modern era of highly technical, complex invention, was never intended to serve as a talisman for equivalence determinations. As Judge Learned Hand once observed: "The usual ritual, which is so often repeated and which has so little meaning, that the same result must follow by substantially the same means, does not help much in application; it is no more than a way of stating the problem." Claude Neon Lights, Inc. v. E. Machlett & Son, 36 F.2d 574, 576 (2d Cir. 1929), cert. denied, 281 U.S. 741 (1930). Movement away from the reflexive and wooden application of this test, which has led to unpredictable results, is the first step toward bringing much needed certainty to the law of infringement. As one commentator has stated in comparing the analyses for obviousness and equivalence: "The current obviousness analysis based on objective criteria provides judicial opinions properly based on relevant facts. The doctrine of equivalents should likewise consistently require analysis of objective facts . . . to avoid the uncertainty presently

<sup>12</sup> One commentator opined that Justice Black's dissent in Graver Tank, which predicted that manufacturers would not be able to rely on claim language, "seem[ed] less foreboding, at least in respect to mechanical and electrical cases." Arthur H. Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y 19, 29 (Jan. 1951).

surrounding its application." Stephen G. Kalinchack, Obviousness and the Doctrine of Equivalents in Patent Law: Striving for Objective Criteria, 43 Cath. U. L. Rev. 577, 606 (1994).

The majority below seemingly took this first step by declaring that function-way-result is not "the" test of equivalence (Pet. App. 9a), and that the ultimate determinant must be the substantiality of the differences between the accused device or method and the literal terms of the patent claims. Id. at 7a-9a. Indeed, the majority explained that "the vantage point of one of ordinary skill in the art provides the proper perspective for assessing the substantiality of the differences." Id. at 10a. Inexplicably, however, the majority upheld a jury verdict of infringement in which, as it candidly acknowledged, "the only available evidence going to the substantiality of the differences" was "evidence of function, way, result," and in which the jury received no further guidance for determining whether a person of skill in the art would deem the difference between pH values of 5.0 and 6.0 substantial.

Plainly, competitors cannot reasonably or predictably determine the scope of protected patent rights when such rights are ultimately based on a lay jury's unguided assessment of whether there is "'a nickel's worth of difference'" between an accused device or process and the literal terms of a patent claim. Pet. App. 21a n.3 (quoting respondent's closing argument as evidence that the jury was "properly focused . . . in applying the doctrine of equivalents"). Rather, competitors and patentees can only make reasoned business judgments if the objective considerations that previously governed the doctrine of equivalents, and continue today to govern claim construction generally (see Markman v. Westview Instruments, Inc., 52 F.3d 967, 979-81 (Fed. Cir.) (listing factors), cert. granted, 116 S. Ct. 40 (Sept. 27, 1995) (argued Jan. 8, 1996), are once again consistently employed. Under such an objective regime as determined by a court.

in addition to interpreting the patent claims and specification with the understanding of one of ordinary skill in the art, consideration would be given to the prosecution history, prior art, and the existence of obvious substitutes. Once an invention's scope is defined based on these objective criteria, a factual comparison of the accused device to the patented device will determine the existence of infringement by equivalents.

- B. A Determination Of Equivalence Should Be Based On (1) The Clarity And Breadth Of The Claim Language; (2) The Prosecution History; (3) The Prior Art And The Invention's Status Within That Art; And (4) The Existence Of Obvious Substitutes.
  - Clarity and breadth of the claim language should be a significant guide to determining equivalence.

As with statutes, the process of claim construction must begin with the language of the claims itself. The analogy of statutory construction, however, must be tempered by the recognition that claims are drafted by and for inventors and must speak not to judges or the public at large, but to those of skill in the relevant field of art. "The lucidity of a claim is determined in light of what ideas it is trying to convey. Only by knowing the idea, can one decide how much shadow encumbers the reality." Autogiro, 384 F.2d at 396.

With its decision in Winans, this Court recognized the basic principle of claim construction that a patentee may use language so precise and unambiguous to "restrict his claim as to cover less than what he invented, or [to] limit it to one particular form . . ., excluding all other use language so precise and unambiguous to "restrict forms." Winans v. Denmead, 56 U.S. (15 How.) 330, 341 (1853). Since Winans, the Court also has acknowledged that, by claiming a combination of elements or parts, the patentee may render each such element or part material, and a court therefore "cannot declare that any one of these elements is immaterial." Water-Meter Co. v.

Desper, 101 U.S. 332, 337 (1879). Similarly this Court has held that where inventors claim as their invention a process, the patent "is not and cannot be on the result,—and the scope of their right is limited to the means they have devised and described as constituting the process." Minerals Separation Ltd. v. Butte & Superior Mining Co., 250 U.S. 336, 349 (1919).

Here, respondent's claim recites use of a "'pH from approximately 6.0 to 9.0.'" Pet. 5. The question that arises, therefore, is whether persons of skill in the art would understand that use of a pH of 5.0 would be an insubstantial difference from use of a pH of 6.0. The plain language of the claim does not provide a conclusive answer. The word "approximately" introduces some flexibility and certainly demonstrates that the inventors did not exclude all pH values below 6.0. Cf. Keystone Bridge Co. v. Phoenix Iron Co., 95 U.S. (5 Otto) 274, 275-76 (1877) ("[w]ords cannot show more plainly that the claim of the inventor does not extend to any other eye-bars or chords").

Thus, to resolve the issue, resort must be had to the prosecution history and prior art, and the extent to which persons of skill in the art would deem it obvious to substitute different pH ranges. In this case, these factors all demonstrate that a "'pH from approximately 6.0 to 9.0'" (Pet. 5) does not permit the patentees to treat a pH of 5.0 as equivalent to 6.0.

 Prosecution history estoppel is a vital public basis for determining the proper scope of the invention.

It is necessary in any infringement analysis to consider the public, written record of what occurred between the patentee and the PTO. The patentee, when construing his or her claims, must be estopped from presenting an interpretation of the scope of the invention that contradicts positions taken before the PTO. This Court has long found that [a] comparison of the patent as granted with the application very conclusively establishes the limits within which the patentee's claims must be confined. He is not at liberty now to insist upon a construction of his patent which will include what he was expressly required to abandon and disavow as a condition of the grant.

Sutter v. Robinson, 119 U.S. 530, 541 (1886). See also Schriber-Schroth Co. v. Cleveland Trust Co., 311 U.S. 211, 220-21 (1940); Keystone Driller Co. v. Northwest Eng'g Corp., 294 U.S. 42, 48-49 (1935); Smith v. Magic City Kennel Club, Inc., 282 U.S. 784, 799-90 (1931); Arthur H. Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y 19, 21-22 (Jan. 1951) ("The Supreme Court has . . . ruled repeatedly that claims surrendered by amendment in the Patent Office may not be recaptured by recourse to the Doctrine of Equivalents.").

Here, to overcome the PTO's rejections, the inventors affirmatively amended their claims to add the limitation of a pH range "from approximately 6.0 to 9.0." Pet. 5. The Federal Circuit concluded that this amendment was irrelevant, because it was made only to avoid rejection based on a patent that disclosed a process operating at pH levels above 9.0. Pet. App. 32a. But, as this Court has made clear, such an amendment establishes that the pH range is a material element of the claim and that variations from the specified range are presumptively substantial. "The applicant having limited his claim by amendment and accepted a patent, brings himself within the rules that if the claim to a combination be restricted to specified elements, all must be regarded as material." Magic City Kennel Club, 282 U.S. at 790. Accordingly, in this case the patentee's conduct before the PTO indicates that variations from a pH of 6.0 must be deemed to be material in any determination of equivalence, particularly in view of the fact that, under the pH scale, a single digit reflects a

ten fold difference in the level of acidity. Pet. 4 n.3. Certainly, a second inventor should be able to rely upon this history in deciding whether to proceed with a new process that uses a lower pH level.

### 3. Prior art limitations restrict the sweep of the patent claims.

Related to prosecution history estoppel is the limitation placed on an invention in light of the prior art. The patentee cannot claim an invention that would have been unpatentable during the prosecution stage. Thus, an element is not equivalent if its substitution in the claim would invalidate the claim in light of prior art. "'[I]t is well settled that the claim as allowed must be read and interpreted with reference to . . . the prior state of the art, and cannot be so construed as to cover either what was rejected by the Patent Office or disclosed by prior devices.' "Computing Scale Co. of Am. v. Automatic Scale Co., 204 U.S. 609, 617 (1907) (quoting Hubbell v. United States, 179 U.S. 77, 80 (1900)) (emphasis added).<sup>18</sup>

Similarly, the patent's status in light of the prior art is relevant to the breadth of construction of its claims. See, e.g., Minerals Separation, 250 U.S. at 345 (as

hypothetical patent claim, sufficient in scope to literally cover the accused product. The pertinent question then becomes whether that hypothetical claim could have been allowed by the PTO over the prior art....

Viewing the issue in this manner allows use of traditional patentability rules and permits a more precise analysis than determining whether an accused product (which has no claim limitations on which to focus) would have been obvious in view of the prior art.

Wilson Sporting Goods v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990).

"patentees came late into the field" of "fully developed" prior art, "the scope of their right is limited to the means they have devised and described"); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 415 (1908) ("the range of equivalents depends upon and varies with the degree of invention"); Duff v. Sterling Pump Co., 107 U.S. 636, 639 (1882) ("in view of the state of the art, the invention must be restricted"); Water-Meter, 101 U.S. at 336 ("[t]he patent, as it stands, occupies very narrow ground"); Keystone Bridge, 95 U.S. at 278-79 (a court "may . . . resort to prior use and the general history of the art . . . to restrain [the patent's] construction").

A patentee's competitors will typically be familiar with the prior art, and will be able to recognize the breadth or narrowness of the invention. Judicial recognition of this factor will thus facilitate competitors' evaluations of the boundaries of inventions. Here, while there is no indication that respondent's claim would have been invalid had it recited a pH of 5.0, it is clear from the PTO's repeated rejection of the patent application that respondent's invention is a narrow one in a crowded field. The narrowness of the invention would strengthen a competitor's view that a pH value of 5.0 is substantially different from a pH value of "approximately 6.0" (Pet. 5), further militating against a broad construction of the claims.

### 4. Obvious substitutes must be included within the equivalence analysis.

The constellation of infringing equivalents should encompass substitutes known to one skilled in the art. In *Winans*, the Court concluded that an inventor's claims should not be unnecessarily restricted because it is a "reasonable presumption" that "having a just right to cover and protect his whole invention, he intended to do so." 56 U.S. (15 How.) at 341. Thus, where it would be

<sup>13</sup> One approach courts have used to conduct a prior art analysis is to create a

obvious to a person of ordinary skill to substitute one material or device for another recited in a claim that combines several known materials or devices, the claim is properly construed to encompass this merely colorable or insubstantial difference. Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 594, 609 (1950) ("An important factor is whether persons reasonably skilled in the art would have known of the interchangeability of an ingredient not contained in the patent with one that was."). See also Clough v. Barker, 106 U.S. 166, 178 (1882); Imhaeuser v. Buerk, 101 U.S. 647, 656 (1879) ("the substitution of the one for the other cannot be regarded as invention").14

In this case, use of a pH of 5.0 cannot be considered a substitution that would have been obvious to one skilled in the art. One of the co-inventors testified that the claimed process could work to separate impurities at pH values as low as 2.0, but that any solution with a pH below 5.0 would cause "tremendous foaming problems." Pet. App. 62a (Plager, J., dissenting). This Court's precedents make clear that the substitution of an unclaimed material that causes "tremendous problems" for a claimed substance that does not cause such problems simply cannot be considered an "obvious" equivalent. See, e.g., Minerals Separation, 250 U.S. at 353 ("It is difficult to see how a process so wasteful and

inefficient as that of the respondent . . . can be other than substantially different from that of the petitioners.").

#### Intent of the infringer is irrelevant to determining liability.

The above-listed factors provide objectivity and greater certainty in the determination of patent infringement by equivalents. As a necessary adjunct, it is important to eliminate subjective factors from the liability analysis, specifically the element of intent. The doctrine of equivalents is part of construing claims, and if the claim language is to provide notice as to the scope of the invention, the meaning of the language cannot vary depending upon the intent of various infringers. A patentee should not face the possibility of different answers to the question of infringement of liability for different defendants.

Furthermore, there is no statutory basis for the proposition that a patentee's right to exclude should hinge on the intent of the infringer. The majority below correctly noted that "[a] patent owner may exclude others from practicing the claimed invention, regardless of whether infringers even know of the patent" (Pet. App. 12a), and that a defendant may infringe "'without intending, or even knowing it; but he is not on that account, the less an infringer." Id. (quoting Parker v. Hulme, 18 F. Cas. 1138, 1143 (C.C.E.D. Pa. 1849) (No. 10,740)).15 Similarly, there is likely to be little difference in intent between a defendant that intends to copy a patent with only minor differences and one that intends to design around the patent—in each case, the dispositive question will be whether the differences introduced by the defendant are in fact substantial, and not the nature of the intent that produced them. Thus, as Justice Jackson sagely observed in an earlier patent case: "The less legal rights depend on someone's state of mind, the better."

Winters, 280 U.S. 30 (1929), correctly concluded that the range of infringing elements should not be limited solely to those substitutes known when the patent issued. Pet. App. 31a. Support for the notion that equivalent infringement includes equivalents unknown at the time of the patent has a historical basis. In Graver Tank, "the Supreme Court recognized an old principle... stated by Robinson in his 'Treatise on the Law of Patents,' as follows: '... it (the equivalency) must have been known as such at the date of the patent, or have since become known without the exercise of inventive skill.'" Arthur H. Swanson, A Discussion of the Application of the Doctrine of Equivalents in the Graver v. Linde Case, 33 J. Pat. Off. Soc'y 19, 22 (Jan. 1951) (footnote omitted) (emphasis added).

<sup>15</sup> Intent may be relevant, of course, to an assessment of damages once liability is established. 35 U.S.C. § 284.

Mercoid Corp. v. Mid-Continent Inv. Co., 320 U.S. 661, 679-80 (1944) (Jackson, J., dissenting).

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The use of these objective criteria and the elimination of intent as a factor in determining liability for infringement should build more certainty into the law on infringement while remaining consistent with Congress's intent to provide broad protection to patent rights.

#### C. In A Jury Trial, The Judge Should Determine The Scope Of The Invention.

As IPO has argued elsewhere, it is the proper role of the judge to determine claim construction. See Brief Amicus Curiae of Intellectual Property Owners in Markman v. Westview Instruments, Inc., No. 95-26 (U.S. argued Jan. 8, 1996). The rationale for this approach derives from the nature of the public right created by Congress in the patent laws and Congress's reliance upon the Patent and Trademark Office to ensure that each invention complies with the requirements of the patent laws. See 35 U.S.C. §§ 111, 112, 131; 37 C.F.R. § 1.104 (a). See also Graham v. John Deere Co., 383 U.S. 1, 18 (1966). Because the patent confers a significant governmental grant of exclusivity, it is vital that the metes and bounds of the grant be clear. Moreover, given the highly structured nature of the patentability decision made by the PTO as an expert agency, the Federal Circuit's analogy in Markman between patent construction and statutory interpretation is precisely on point. Markman, 52 F.3d at 987. In both situations it is vital that the scope of the protected right be certain and consistent. Such consistency is only possible if the issue is decided by the trial court with de novo review by an appellate court.

Defining the scope of equivalents is, without question, part of claim construction. Accordingly, the judge should determine the scope of the invention in a patent infringement suit based on the doctrine of equivalents. Carving out this role for the judge is consistent with the Court's opinion in *Winans*, where the respective roles of judge and jury in a patent infringement case were defined:

On such a trial, two questions arise. The first is, what is the thing patented; the second, has that thing been constructed, used, or sold by the defendants.

The first is a question of law, to be determined by the court, construing the letters-patent, and the description of the invention and specification of claim annexed to them. The second is a question of fact, to be submitted to a jury.

56 U.S. (15 How.) at 338.16 See also Coupe v. Royer, 155 U.S. 565, 579 (1895) (following Robinson's treatise on patents: "'the court defines the patented invention as indicated by the language of the claims; the jury judge whether the invention so defined covers the art or article employed by the defendant'").

In nevertheless ruling that the doctrine of equivalents should be applied by juries, the majority below relied on this Court's statement in *Graver Tank* that "[a] finding of equivalence is a determination of fact." Pet. App. 14a (quoting *Graver Tank*, 339 U.S. at 609). But, as the majority itself acknowledged, a finding of infringement, whether literal or under the doctrine of equivalents, is always a question of fact. *Id.* (citing *Winans*, 56 U.S. (15 How.) at 338). This characterization of the ultimate finding does not dictate that juries must determine the scope of equivalents, any more than it dictates that, in cases involving literal infringement, juries must construe the claims. *Winans* makes clear that the construction of patent claims, including the determination of equivalents,

<sup>&</sup>lt;sup>16</sup> However, even if the jury is assigned the task of determining the scope of the invention, jurors likewise need guidance to promote certainty and consistency in verdicts. The objective criteria proposed would instruct a jury as well as a judge.

is a question of law for the courts, even though a jury may ultimately make the factual determination that a defendant infringes the properly construed claims. This Court did not abandon this division of responsibility in *Graver Tank*, a case in which both issues were decided by the trial court.

\* \* \* \*

The outcome in this case illustrates that the lack of objectivity in an infringement analysis often leads to the wrong result. In particular, the Federal Circuit erred in failing to give proper consideration to the PTO's rejections of respondent's applications, the materiality of the amendment respondent incorporated in response to those rejections, the narrowness of the invention in light of the amendment and the prior art, and the non-obvious nature of substituting a pH value of 5.0 in light of the inventors' own difficulties in developing the patented process. This failure to analyze these objective factors led to the majority's conclusion that the inventors' amendment "to avoid the prior art disclosure of a process operating at a pH higher than 9 does not bar Hilton Davis from asserting equivalency to Warner-Jenkinson's process sometimes operating at a pH below 6." Pet. App. 32a.

Furthermore, this case reveals the inherent problem that arises if the issue is left to the unbounded discretion of the jury based on nothing more than an instruction that "substantial" deviations from a claim that has not been precisely defined by the court do not infringe. This kind of approach provides essentially no guidance to a lay jury and subjects the alleged infringer to post hoc determinations that are utterly unpredictable. What is vital to avoid this serious problem is that the judge decide precisely the scope of the claims based on the objective, publicly available factors identified above—claim language, prosecution history, and prior art. The jury then determines what the allegedly infringing device or process is or does and whether it falls within the claim as defined by the court. It seems likely that this approach will

permit a significantly larger number of patent infringement issues to be decided on summary judgment and clearly will enhance certainty in patent law.

For example, in this case there seems to be no dispute that petitioner does not use a pH above 6.0. Thus, once the claim is properly construed as limited to a pH range between 6.0 and 9.0, or as not extending to pH values of 5.0 and below, there is nothing left for the jury to decide. The jury would only have an issue to decide if there was a dispute between the parties concerning the pH levels petitioner actually uses. In that case the jury clearly would decide that specific question. But reliance on the jury for that issue in no way undermines the consistency and clarity that arises from the court's determination of the precise definition of the claim based upon the objective and publicly available information cited above.

#### CONCLUSION

For all the foregoing reasons, the judgment of the court of appeals should be reversed.

Respectfully submitted,

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**APPENDIX** 

#### APPENDIX

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Supri

No. 95-728

# Supreme Court of the United States October Term, 1995

WARNER-JENKINSON COMPANY, INC.,

Petitioner,

V.

HILTON DAVIS CHEMICAL CO.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### BRIEF OF GATEWAY TECHNOLOGIES, INC., AS AMICUS CURIAE IN SUPPORT OF PETITIONER

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1718

#### TABLE OF CONTENTS

Page
TABLE OF AUTHORITIES ii
INTEREST OF AMICUS
SUMMARY OF ARGUMENT 1
STATEMENT OF THE CASE AND FACTS 3
ARGUMENT 5
I. THE DOCTRINE OF EQUIVALENTS SHOULD BE LIMITED IN APPLICATION TO PREVENT "INVENTION" BY COPYING
II. BY DIRECTING A DOCTRINE OF EQUIVALENTS ANALYSIS TO SPECIFIC FACTORS DESIGNED TO DISTINGUISH COPYING FROM INDEPENDENT DEVELOPMENT, MANY EQUIVALENTS CASES CAN BE RESOLVED EXPEDITIOUSLY
CONCLUSION

#### TABLE OF AUTHORITIES

Cases	Page(s)
Brenner v. United States, 773 F.2d 306 (Fed. 1985)	
Graver Tank & Mfg. Co. v. Linde Air Product Co., 339 U.S. 605 (1950)	
Hilton Davis Chemical Co. v. Warner-Jenkins Co., 62 F.3d 1512 (1995) (en banc)	son
Keystone Bridge Co. v. Phoenix Iron Co., 95 274 (1877)	U.S.
Lear Siegler, Inc. v. Sealy Mattress Co. of Michigan, Inc., 873 F.2d. 1422 (Fed. Cir	
1989)	
Sanitary Refrigerator Co. v. Winters, 280 U.S. (1929)	
Spectra Corp. v. Lutz, 839 F.2d 1579 (Fed.C. 1988)	
Winans v. Denmead, 56 U.S. (15 How.) 330	
(1854)	6
Zenith Laboratories, Inc. v. Bristol-Myers Squ	uibb
Co., 19 F.3d 1418 (Fed.Cir.), cert. denied	
U.S (1994)	2

#### Statutes and Miscellaneous

35 U.S.C. § 112, ¶2	2
35 U.S.C. § 251	7
Fed. R. Civ. P. 49	11
Fed. R. Civ. P. 50	10

#### INTEREST OF AMICUS

Gateway Technologies, Inc., is a privately held company<sup>1</sup> that has developed, manufactures, and sells a telecommunication system that is based upon a patented invention to the corrections market. As a telecommunications niche supplier, patent protection and research and development are crucial to its success. It is currently involved in patent litigation as both plaintiff and defendant. Amicus has a keen and immediate interest in the role of the doctrine of equivalents in patent litigation.<sup>2</sup>

#### SUMMARY OF ARGUMENT

This case gives the Court the opportunity to reexamine completely the applicability and scope of the doctrine of equivalents. In the more than forty-five years since the Court's last explication of the doctrine, in *Graver Tank & Mfg. Co. v. Linde Air Products Co.*, 339 U.S. 605 (1950), patent litigation has grown exponentially in volume, complexity, and importance. Misuse of the doctrine of equivalents has contributed to this growth. Patentee plaintiffs have added charges of infringement by equivalents as a matter of routine, making the doctrine the "second prong" of virtually any infringement claim.<sup>3</sup> This expansive use of a judicially created doctrine intended by this Court strictly as a means to avoid "piracy" and

Gateway has no subsidiaries.

<sup>&</sup>lt;sup>2</sup> Gateway has no financial or other direct interest in the outcome of this case. Consents of the parties to this brief have been filed with the Clerk.

<sup>&</sup>lt;sup>3</sup> See Hilton Davis Chemical Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1537 (Plager, J., dissenting); see also Pet. at 16 n.16.

mindless formalism has brought consequences that do violence to a basic principle of the patent system, the notion that the patent claims define the metes and bounds of the monopoly grant of a patent.<sup>4</sup>

The consequences to companies and individuals whose livelihood depends upon invention are equally obvious and severe. This Court and the Federal Circuit have described "designing around" a patent as praiseworthy and a benefit to society from the disclosure of an invention required to obtain a patent monopoly. That healthy activity is jeopardized by the threat of defending a new product against an infringement claim based upon a general charge of infringement by equivalents. As demonstrated by the facts of this case, even the result of independent development, with no copying at all, can be subject to an injunction under such an indefinite standard.

It is high time, therefore, that this Court restores the doctrine to its proper, limited place in patent litigation. The Federal Circuit felt itself constrained from a comprehensive reassessment of the doctrine by this Court's decision in *Graver Tank*. Having agreed to review the Federal Circuit's decision, this Court can and should provide that reassessment in light not only of this Court's precedent, but also the practicalities of today's patent litigation and the policies of the Patent Act.

Amicus urges the Court to reverse the judgment below, and: (i) to define the limited circumstances—to prevent "invention" by copying—in which the doctrine of equivalents may be applied; and (ii) to list the factors that

the trial court and jury<sup>5</sup> should consider in analyzing infringement by equivalents in such cases. This Court should provide a clear admonition to trial judges strictly to control the circumstances in which infringement by equivalence may be found.

#### STATEMENT OF THE CASE AND FACTS

The facts underlying the infringement dispute in this lawsuit are accurately stated in the Petition. Amicus would emphasize the following facts:

- (i) Petitioner developed its filtration process independently of Respondent's patent, Respondent's process, and Respondent's development activities. Petitioner began its research in 1982, more than three years before the patent issued and four years before it actually became aware of the patent. There is no evidence that "copying" played any part in Petitioner's development or refinement of its process.
- (ii) Petitioner's process added significant value to the invention embodied in Respondent's patent. Petitioner was able to use a pH lower than "approximately 6.0" without encountering the "foaming" that appeared to have limited the range claimed in Respondent's patent.

See 35 U.S.C. § 112, ¶ 2; Zenith Laboratories, Inc. v. Bristol-Myers Squibb Co., 19 F.3d 1418, 1430 (Fed.Cir.), cert. denied, \_\_\_\_ U.S. \_\_\_\_ (1994).

The most acute disagreement among the judges of the Federal Circuit who participated in that court's en banc decision was over the role of the jury in a doctrine of equivalents case. Amicus does not address that issue, except to note that infringement has traditionally been a matter for the jury. References in this brief to the jury may be read as a reference to the fact finder, whether that be trial judge Gr jury.

(iii) The difference between the pH used in Petitioner's process (5.0) was material from that claimed in the patent ("approximately 6.0 to 9.0"). A change in one numerical pH value "represents a relative change in the acidity equal to a factor of 10," and greater changes are even more substantial since the pH scale is logarithmic. 62 F.3d at 1580 n.35 (Nies, J., dissenting).

Similarly, we emphasize certain aspects of the prior proceedings in this litigation:

- (i) This case went to the jury only on a claim of infringement by equivalents. At trial Respondent disclaimed its original charge of literal infringement.
- (ii) The Court of Appeals felt itself bound by this Court's Graver Tank decision. Indeed a dissenting judge chided the majority for adhering to Graver Tank rather than giving the doctrine of equivalents an overhaul for this Court to evaluate. 62 F.3d at 1545 (Plager, J., dissenting).
- (iii) All of the judges of the Federal Circuit who participated in the en banc decision recognized the need for the doctrine of equivalents against piracy and the unscrupulous copier. The differences among the judges went to the factors to be considered in applying and undertaking an equivalency analysis, and to whom—judge or jury—should make the analysis.
- (iv) Applying the doctrine of equivalents to a particular case requires determination of underlying facts. This was also the unanimous view of the judges of the Federal Circuit.

#### ARGUMENT

## I. THE DOCTRINE OF EQUIVALENTS SHOULD BE LIMITED IN APPLICATION TO PREVENT "INVENTION" BY COPYING

The facts involved in Graver Tank support the view that the doctrine of equivalents was intended to be, and should be, carefully limited to prevention of "piracy" by an "unscrupulous copyist"6—a so called "invention" that consists primarily of manipulation, more of words than of substance, around the literal scope of a valid patent claim. At issue in Graver Tank was the trial court's finding of infringement by equivalents of Linde's patent claims covering an electric welding composition. The patented invention and the alleged infringing composition were "alike" in all respects except that the infringing product used silicates of calcium and manganese rather than silicates of calcium and magnesium. The patent claimed a flux "containing a major proportion of alkaline earth metal silicate." Manganese is not an alkaline earth metal. 339 U.S. at 610. The trial judge found the two compositions "substantially identical in operation and in result," based upon evidence including:

- Expert testimony that manganese and magnesium were similar in many of their reactions (id.);
- (2) Expert testimony that alkaline earth metals are often found in manganese ores in their natural state that they serve the same purpose in fluxes (id. at 610-11);

<sup>6</sup> Graver Tank, 339 U.S. at 607.

- (3) Contemporaneous prior art references that disclosed use of manganese silicate in welding fluxes (id. at 611);
- (4) The fact that "the record contains no evidence of any kind to show that [the infringing product] was developed as the result of independent research or experiments" (id.).

On the basis of these findings, which the Court upheld as not clearly erroneous, the Court concluded that "it is difficult to conceive of a case more appropriate for application of the doctrine of equivalents," and that:

"[w]ithout some explanation or indication that [the infringing product] was developed by independent research, the trial court could properly infer that the accused flux is the result of imitation rather than experimentation or invention."

#### Id. at 612.

Since its origination by the courts<sup>7</sup> the doctrine of equivalents has been intended primarily if not exclusively to prevent "fraud on a patent." That it has been taken far beyond this limited purpose is beyond doubt. It has been used, and was used in this case, to attempt to enlarge a patent beyond limits specifically demarcated (in this case numerically) in the applicable patent claim. It has been used, and was used in this case, to attempt to circumvent the doctrine of Patent Office or prosecution history estoppel. It has been used, and was used in this case, to

enjoin further use of a product that was independently developed and added material value to the invention claimed in the patent. Misuse of the doctrine, as in this case, undermines the statutory requirement of clear claiming in patent applications. Such expansionist use of this judicially created doctrine has cast uncertainty on the innovation that is a crucial and necessary part of a technology in other industries.

The pace of research and development and of the search for new and better products is not likely to be retarded by this uncertainty. Success in many marketplaces (certainly those in which amicus competes) depends upon continual technological advances and new and better products. What this uncertainty unquestionably adds, though, is the cost and risk of many unjustifiable lawsuits. In this case the Court should make clear the limited applicability of the doctrine of equivalents to cases in which copying, rather than independent invention, is the principal issue.

# BY DIRECTING A DOCTRINE OF EQUIVALENTS ANALYSIS TO SPECIFIC FACTORS DESIGNED TO DISTINGUISH COPYING FROM INDEPENDENT DEVELOPMENT, MANY EQUIVALENTS CASES CAN BE RESOLVED EXPEDITIOUSLY

In Graver Tank, the Court enunciated what has come to be known as the triple identity test: "a patentee may invoke this doctrine to proceed against the producer of a device 'if it performs substantially the same function in substantially

The doctrine in this country dates back at least to this Court's decision in Winans v. Denmead, 56 U.S. (15 How.) 330 (1854). Several dissenting judges in the Federal Circuit trace its genesis back to the English Court of Chancery. See, e.g., 62 F.3d at 1540-41 (Plager, J., dissenting).

<sup>&</sup>lt;sup>8</sup> Post-issuance enlargement of claims is prohibited by the Patent Act, 35 U.S.C. § 251, and forbidden to the courts in patent litigation. *Keystone Bridge Co. v. Phoenix Iron Co.*, 95 U.S. 274, 278 (1877).

the same way to obtain the same result.' 339 U.S. at 608, citing Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929). The Court listed the following factors as relevant to conducting a function-way-result analysis:

- "... the purpose for which an ingredient is used in a patent, the qualities is has when combined with the other ingredients, and the function which it is intended to perform" (339 U.S. at 609);
- (2) Whether persons skilled in the art would have known of the interchangeability of the ingredient claimed to be equivalent (id.);
- (3) Whether the accused product "was developed as a result of independent research or experiments" (id. at 611);
- (4) Whether the accused product was "the result of imitation rather than experimentation or invention" (id. at 612);
- (5) The degree to which the changes differed from those claimed in the patent (id.).

The Court of Appeals in this case focused on the first and last of these factors, which it summarized as "the substantiality of the differences between the claimed and accused products or processes . . . . " 62 F.3d at 1518. It also endorsed the second factor, and deemed relevant evidence of whether the alleged infringer had knowingly copied the patent in suit. The majority judges, however, held that evidence of independent development (embodied in the third and fourth factors listed above) was relevant only to disprove a patentee's evidence of copying by the alleged infringer. The majority also rejected any evidence of the intent of the alleged infringer. The dissenting judges would have included both of these as relevant, and would also have trial courts consider

- (6) whether use of the doctrine is prohibited by the rationale of prosecution history estoppel;
- (7) prior art limitations; and
- (8) whether the claim of infringement serves to enlarge the patent claim.

Amicus would add a further factor, by rephrasing a combination of items (1) and (5): whether the accused product or process adds utility to the patented invention.

Amicus believes that all of the above factors, and perhaps others, have their place, both in considering whether the case is one of those few to which the doctrine of equivalents may be applied, and, if so, in undertaking the factual analysis<sup>9</sup> necessary to determine equivalency.

In many cases in which a patentee asserts infringement by equivalence, careful control by the trial judge will permit prompt resolution of these issues and simplification of the matters ultimately to be determined by the fact finder. Many factual matters, even in complicated lawsuits involving complicated subject matter, are subject to summary resolution by the trial court, "in a patent case as in any other." Brenner v. United States, 773 F.2d 306, 307 (Fed. Cir. 1985). Amicus believes that many of the doctrine of equivalents factors listed above will be susceptible of such resolution in many of the cases in which equivalency infringement is now asserted.

<sup>&</sup>lt;sup>9</sup> Two aspects of the doctrine of equivalents cited by this Court in *Graver Tank*, 339 U.S. at 609, were acknowledged as correct by all the judges of the Court of Appeals in this case:

<sup>—&</sup>quot;Equivalence in the patent law, is not the prisoner of the formula and is not an absolute to be considered in a vacuum."

<sup>-- &</sup>quot;A finding of equivalents is a determination of fact."

Trial courts can employ several of these criteria to determine whether the doctrine is available at all. In our view there is no place for the doctrine if the record reveals:

- significant independent development by the alleged infringer; or
- (ii) significant value added by the ingredient outside the patent claim but alleged to be equivalent; or
- (iii) claim of equivalence as to a matter which could have been, but was not, claimed in the patent, or which could not have been claimed in light of the prior art. 10

Often sufficient evidence of one or more of these items will be available early in a patent case; indeed (as in this case), the patent prosecution history may disclose it. More often, such evidence will be developed during discovery, and available before trial for resolution by the Court on summary judgment.

equivalence Other criteria relevant analysis-substantiality of the differences in the two products, the extent of copying versus designing around, and the defendant's intent-are less susceptible of bright line rules, but may nevertheless be ruled on summarily by the trial judge, either on a pretrial motion for summary judgment or a post-verdict motion for judgment as a matter of law (JMOL) under Fed. R. Civ. P. 50. Merely because factual determinations are involved does not preclude summary resolution if there is insufficient evidence to present the fact finder with a material issue of fact for determination. For example, the triple identity test is conjunctive, and lack of evidence on any of its prongs will

cause claimed equivalence to fail. There will be situations where no reasonable juror could find substantial identity. 11 See, e.g., Spectra Corp. v. Lutz, 839 F.2d 1579, 1581-82 (Fed. Cir. 1988). In cases where a factual issue remains for the jury a carefully crafted jury charge 12 and answers to special interrogatories (Fed. R. Civ. P. 49) may yield a factual foundation for a legal conclusion of JMOL.

For four distinct reasons, amicus prefers a summary judgment standard to the equitable threshold test proposed by the dissenting judges in the Court of Appeals. See 62 F.3d at 1544-45 (Plager, J., dissenting); 62 F.3d at 1549 (Lourie, J., dissenting). First, summary judgment is the norm in all civil cases, and no one has advanced a compelling reason why there should be a special rule, the equivalent of an equitable writ, just for patent cases. Second, the threshold test proposed by the dissenters turns, as they acknowledge, not on traditional equitable considerations, divorced from the merits of the ultimate determination of equivalency, but rather on the applicability of the equivalency criteria themselves. Third, equating the doctrine to an equitable writ will generate needless litigation over collateral issues (clean hands, for example)

<sup>10</sup> As noted above, *supra*, pages 3-4, there was undisputed evidence of all three of these criteria in this case.

<sup>11</sup> Amicus believes the difference in pH between Petitioner's process and Respondent's patent claim makes that true of this case.

<sup>12</sup> The jury charge in this case (quoted at 52 F.3d 1561 (dissenting opinion of Judge Nies)) was conclusionary and plainly inadequate, really nothing more than a summary restatement of the triple identity test. A trial judge must fashion the charge to the relevant circumstances of the particular case to provide the jury adequate guidance for a substantiality determination. See Lear Siegler, Inc. v. Sealy Mattress Co. of Michigan, Inc., 873 F.2d. 1422, 1425-26 (Fed. Cir. 1989) ("a jury must be separately directed to the proof of each Graver Tank element").

that are part of traditional equity jurisprudence but usually irrelevant to a patent suit. Fourth, and most importantly, the standards of review by a Court of Appeals of a summary judgment determination are well established and far more manageable then those for the grant or denial of an equitable writ. The Federal Circuit will be able in future cases to adapt these standards to the criteria enunciated by this Court as appropriate for equivalency determinations.

The application of the equivalence criteria to any case requires careful control by a trial judge. Trial judges have been accused, even by certain judges of the Federal Circuit, 13 of translating a dislike of patent cases or a lack of technical expertise into a predilection to pass off difficult issues to the jury whenever possible. If this occurs it is indefensible whatever one's views of the role of the jury in patent litigation. Patent litigation has sprouted like the leaves of the green bay tree. Restricting the doctrine of equivalents as amicus proposes may not stem this growth, but it should eliminate one excess that defies the regime established by Congress for promotion of the useful arts. Under either an equitable threshold standard or the ordinary rules for summary judgment, JMOL, and jury charges, the trial judge must keep the doctrine of equivalents in its proper, limited place.

#### CONCLUSION

The Court should limit use of infringement by equivalents to cases of "invention" by copying, and set out the criteria for application of the doctrine of equivalents in that limited class of cases. Under the standards proposed by amicus, the judgment of the Court of Appeals should be reversed.

April 15, 1996

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<sup>13</sup> See, e.g., 62 F.3d at 1538, 1542 (Plager J., dissenting).

No. 95-728

Supreme Court, U.S. F. I. L. F. D.

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### Supreme Court of the United States

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.
Petitioner,

HILTON DAVIS CHEMICAL Co.

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF
BIOTECHNOLOGY INDUSTRY ORGANIZATION
AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

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#### TABLE OF CONTENTS

		Page
TABI	LE OF AUTHORITIES	ii
STAT	TEMENT OF INTEREST	1
SUM	MARY OF THE ARGUMENT	3
ARG	UMENT	7
I.	FOR PATENTED INVENTIONS INVOLVING "SOPHISTICATED" TECHNOLOGIES, THE DOCTRINE OF EQUIVALENTS IS CRITICAL FOR ENSURING PROTECTION FOR THE PATENTED INVENTION	7
II.	THE DOCTRINE OF EQUIVALENTS SHOULD BE UTILIZED IN PROPERLY DEFINING THE SCOPE AND MEANING OF THE PATENTED INVENTION	10
	A. The Difference Between The Literal Lan- guage Of The Claim And The Accused Device Or Process Must Always Be "Insubstantial"	13
	B. Application Of The Doctrine Of Equivalents Is Limited By The Prosecution History Estoppel Doctrine And The Relevant Prior Art	14
	1. Prosecution history estoppel doctrine	14
	2. Limitations imposed by the prior art	15
III.	THE DOCTRINE OF EQUIVALENTS IS USED TO UNDERSTAND THE SCOPE OF THE PATENTED INVENTION; IT DOES NOT FUNCTION TO CORRECT A DEFECTIVE CLAIM	16
IV.	THE INTENT OF ONE FOUND LIABLE FOR INFRINGEMENT OF A PATENTED INVENTION IS NOT RELEVANT TO THE DETERMINATION OF LIABILITY	18
G0376		
CUN	CLUSION	19

#### TABLE OF AUTHORITIES

Car	ses	Page
	Autogiro Co. of America v. United States, 384 F.2d 391 (Ct. Cl. 1977), cert. denied, 434 U.S. 1051	12
	(1978)	12
	Cir. 1994)	16
	Graver Tank & Mfg. Co., Inc. v. Linde Air Prod-	20 20
	ucts, Inc., 339 U.S. 605 (1950)10,	11, 14
	Hilton Davis Chemical Co. v. Warner-Jenkinson	
	Company, Inc., 62 F.3d 1513 (Fed. Cir. 1995)	1, 14
	Hogan, In re, 559 F.2d 595 (C.C.P.A. 1977)	4
	Intel Corp. v. U.S. Int'l Trade Comm'n, 946 F.2d	40
	821 (Fed. Cir. 1991)	19
	Machine Co. v. Murphy, 97 U.S. 120 (1877)	13
	Markman v. Westview Instruments, Inc., 64	E 11
	U.S.L.W. 4263 (1996)	, 0, 11
	Pennwalt Corp. v. Durand-Wayland Inc., 833 F.2d 931 (Fed. Cir. 1987)	4
	Scripps Clinic Research Found. v. Genentech Inc.,	
	927 F.2d 1565 (Fed. Cir. 1991)	4
	Seattle Box Co., Inc. v. Industrial Crating and	
	Packaging, Inc., 756 F.2d 1574 (Fed. Cir. 1985)	18
	Sperry v. Florida, 373 U.S. 379 (1963)	20
	Sutter v. Robinson, 119 U.S. 530 (1886)	15
	Texas Instrument Inc. v. U.S. Int'l Trade Comm'n,	
	846 F.2d 1369 (Fed. Cir. 1988)	4
	Topliff v. Topliff, 145 U.S. 156 (1892)	20
	Twin Peaks Prod., Inc. v. Publication Int'l Ltd.,	
	996 F.2d 1366 (2nd Cir. 1993)	12
	Wilson Sporting Goods v. David Geoffrey & Assocs.,	
	904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498	
	U.S. 992 (1990)	16
Cor	nstitution, Statutes and Rules	
	United States Constitution, Art. 1, Sec. 8 cl. 8	10
	15 U.S.C. §§ 1051-1127	12
	15 U.S.C. § 1114(1) (a)	12
	17 U.S.C. §§ 101-1101	12
	35 U.S.C. § 101	3
	35 U.S.C. § 102	3

TABLE	OF	AUTHORITIES—Continued	

		Page
	35 U.S.C. § 103	3
	35 U.S.C. § 111	11
	35 U.S.C. § 112	3, 11
	35 U.S.C. § 122	14
	35 U.S.C. § 251	
	35 U.S.C. § 252	18
	35 U.S.C. § 271	
	37 C.F.R. § 1.11	14
	37 C.F.R. § 1.14	14
Ais	scellaneous	
	McCarthy, Trademarks and Unfair Competition	
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	1995)	5

## Supreme Court of the United States

OCTOBER TERM, 1995

No. 95-728

WARNER-JENKINSON COMPANY, INC.
Petitioner,

HILTON DAVIS CHEMICAL CO.

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF BIOTECHNOLOGY INDUSTRY ORGANIZATION AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

#### STATEMENT OF INTEREST

The Biotechnology Industry Organization ("BIO") files this amicus curiae brief in the appeal of Hilton Davis Chemical Co. v. Warner-Jenkinson Company, Inc., 62 F.3d 1513 (Fed. Cir. 1995). Written consent to the filing of this brief has been obtained from the petitioner and the respondent and is being filed herewith.

The matter before the Court raises the most fundamental question about our patent system, the scope of protection to be accorded under a United States patent. The role that the doctrine of equivalents plays in determining that scope is of profound importance to BIO.

BIO represents over 580 companies, academic institutions, state biotechnology centers and related organizations in 47 states and more than 20 nations, engaged in the development of products and services in the areas of agriculture, biomedicine, biopharmaceuticals, diagnostics, food, energy and environmental applications. BIO's members conduct research and development programs primarily directed to the discovery of innovative techniques and products to treat and diagnose diseases and disorder. To date, the biotechnology industry has produced 39 drugs approved for commercialization by the Food & Drug Administration ("FDA"); these drugs have been used to treat over 60 million people. The diseases that these drugs treat include AIDS, cancer, diabetes, multiple sclerosis, cystic fibrosis and many other serious malodies. For most of these diseases, there were no known treatments prior to the development of the biotechnology product. BIO's members almost always seek to patent these inventions.

In 1995, our industry invested 7.7 billion dollars on research and development and production facilities. The biotechnology industry invested at nine times the rate of the average of other United States companies. This investment is particularly remarkable when it is realized that, because of their youth, only 5% of our industrial members earn a profit. The patent system and the doctrine of equivalents play a fundamental role, therefore, in determining the expected future value of inventions developed by our members.

A patent system that rewards innovation is essential for all innovators who seek protection for their discoveries. The biotechnology industry is a relatively nascent industry, with the number of beneficial new products in the research and development pipeline far outnumbering the actual products which have been placed in commerce. In our industry, a lead time of 10 years from initiation of product development to approval for commercialization by the FDA is typical. At this stage in the development of our emerging industry, patents represent a critically important and tangible benchmark which

investors look to for assurance that their investments in the exciting new products of the future will be adequately protected. Accordingly, amicus has an interest in ensuring that our Nation's patent system provides the complete range of protection necessary to fully protect the inventions developed by its members.

The issue before the Court transcends the biotechnology industry. The substantive doctrines of patent law must apply to all technologies in the same way; inventors from the biotechnology industry should be treated no less or no more favorably than inventors from other industries. However, inventors from our industry have a special interest in this issue because the incentives to invest in future research and development and the approach taken to apply for and prosecute claims to inventions from our industry will both be dramatically influenced by the Court's decision.

This brief will set forth the importance of the doctrine of equivalents to the biotechnology industry. This brief will not focus on other, albeit important, issues (e.g., whether the range and scope of equivalents is to be determined by the judge, the jury, or both). The comments and positions presented in this brief will, accordingly, be limited.

#### SUMMARY OF THE ARGUMENT

BIO submits this amicus brief to assist the Court in appreciating an important point in considering the role of the doctrine of equivalents: the doctrine of equivalents, as an aid to construing the scope of a patent to ensure that an innovator's invention is accorded the full protection intended under our Nation's patent laws and regulations. Under our patent system, an innovator who has met the statutory criteria for patentability as defined in 35 U.S.C. §§ 101, 102, 103 and 112, is entitled to exclude others from making, using, offering for sale, selling or importing the patented invention. As codified

in 35 U.S.C. § 271(a), literal infringement is based upon the "patented invention." The legal parameters for determining whether there has been infringement must always be considered in the context of the patented invention.

From BIO's perspective, the most important issues raised by petitioner are an effort to have the Court abolish the doctrine of equivalent or limit its application to situations where the subjective intent of the accused infringer influence the outcome. Other issues are raised by the decision below and are, or will be, addressed by petitioner and respondent. The purpose of this brief, however, is to urge the Court to maintain the doctrine of equivalents and to ensure its application without regard to the intent of the alleged infringer.

If an accused device or process falls within the actual language of the claims, literal infringement is found.<sup>2</sup> In

certain circumstances, the invention as defined by the claims is not literally infringed, but the accused device, composition or process differs in an insubstantial way from the invention as literally claimed. An analysis of infringement under the doctrine of equivalents permits the patentee to obtain protection for the patented invention, including these minor or insubstantial variations from the claims. Many years of patent law jurisprudence have upheld the idea that equity requires that equivalents be considered as part of the claimed invention. Few patent doctrines are as ancient vet maintain such currency. Thus, this Court most recently recognized this in Markman v. Westview Instruments, Inc., 64 U.S.L.W. 4263 (1996), where, citing Schwartz, Patent Law and Practice 1, 82 (2nd Ed. 1995), it noted that the claim of a patent "functions to forbid not only exact copies of an invention, but products that go to the heart of the invention but avoid the literal language of the claim by making a non-critical change." (emphasis added). No decision of any court has held that the doctrine of equivalents can be extended beyond noncritical, i.e., insubstantial, differences.

We believe that only through the application of the doctrine of equivalents can the patentee adequately protect the substance of the patented invention. To limit the patented invention to the literal language of the claims would permit another to appropriate the patented invention by making any one of an almost limitless number of small, insignificant or insubstantial changes to avoid the literal claim language. Moreover, abolishing the doctrine of equivalents would create an undue and unneces-

<sup>&</sup>lt;sup>1</sup> "Except as otherwise provided in this title, whoever without authority makes, uses, offers to sell or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefore, infringes the patent." (emphasis added).

<sup>&</sup>lt;sup>2</sup> According to the Court's recent decision in Markman v. Westview Instruments, Inc., 64 U.S.L.W. 4263 (1996), the scope of a patent claim is a question of law to be determined by the Court.

Another important doctrine related to claim construction is the reverse doctrine of equivalents. This doctrine has been applied in limited circumstances to find no literal infringement where the literal scope of the claims is determined to be overly broad. In these situations, the reverse doctrine serves the same equitable purpose as the doctrine of equivalents by allowing the patented invention to be considered such that the form of the claim does not triumph over the substance of the patented invention. See Scripps Clinic & Research Found. v. Genentech Inc., 833 F.2d 931, 962 (Fed. Cir. 1991); Texas Instruments Inc. v. U.S. Int'l Trade Comm'n, 927 F.2d 1565, 1561 (Fed. Cir. 1988); Pennwalt Corp. v. Durand-Wayland Inc., 846 F.2d 1369, 1372 (Fed. Cir. 1987); and In re Hogan, 559 F.2d 595, 607 (C.C.P.A. 1977) ("Like the judicially-developed doctrine of equivalents, designed to protect the patentee with respect to later-developed variations of the claimed

invention, the judicially-developed 'reverse doctrine of equivalents,' requiring interpretation of claims in light of the specification, may be safely relied upon to preclude *improper* enforcement against later developers."). As such, petitioner might be questioned as to how this Court can undercut or remove the doctrine of equivalents without also undercutting or removing the reverse doctrine of equivalents.

sary burden on the biotechnology patent applicant, the Patent & Trademark Office ("PTO") and the public at large. We shall describe one example of such a burden effecting our industry if the doctrine is abolished (see *infra* pages 7-10.

In order to balance the equities of the inventor's right to protect equivalents with the need to provide reasonably certain boundaries of patent protection, there are strict limitations placed upon the doctrine of equivalents. For example, the doctrine of equivalents is subordinate to limitations imposed by the prosecution history estoppel doctrine. The prosecution history estoppel doctrine precludes a patentee from recapturing subject matter that was given up during prosecution to obtain allowance. The doctrine of equivalents is also limited by the prior art. Equivalents cannot encompass that which formed part of the prior art.

Petitioner argues that the doctrine of equivalents is inconsistent with the legislative machinery for correcting patents by reissue. We shall show below that the doctrine of equivalents is distinct from and not inconsistent with the mechanism provided for in the reissue patent statute.

Although the doctrine of equivalents can be viewed as being equitable in nature, this only ensures that the patented invention is not violated under circumstances where literal infringement is avoided. Infringement under the doctrine of equivalents is infringement. There is no principle which recognizes "innocent" or "accidental" infringement. Petitioner, the alleged infringer, and several of the amici, urge in the alternative that if the Court is unwilling to abolish the doctrine, then it should be restricted, because of its "equitable" nature, to alleged infringers who have knowingly sought to steal the substance of the patented invention by exploiting a weakness in the claims. In other words, depending upon an alleged infringer's knowledge or lack of knowledge of a patent and a subjective determination of their intent, two in-

dividuals doing exactly the same thing would in one situation be found to infringe and in another held not to be liable. We believe that such a dichotomy is not only unfair to the innovator, but unworkable and subject to abuse.

#### ARGUMENT

I. FOR PATENTED INVENTIONS INVOLVING "SOPHISTICATED" TECHNOLOGIES, THE DOCTRINE OF EQUIVALENTS IS CRITICAL FOR ENSURING PROTECTION FOR THE PATENTED INVENTION

BIO urges this Court to maintain the doctrine of equivalents as a tool to be used in properly determining the scope and meaning of the claims.

Maintaining the doctrine of equivalents is particularly important to the biotechnology industry, given the nature of the technology which we utilize. The diversity of our industry prevents the illustration of the importance of the doctrine of equivalents to our members in a single example. However, to better understand and appreciate our position, we provide a brief illustration of a technological approach used by many of our members in harnessing the power of recent advances in molecular biology to the development of bio-pharmaceuticals.

Many biotechnology inventions relate to proteins. Insulin is an example of a well known protein. A variety of life-saving and life-enhancing therapeutic proteins have been developed by BIO members that have been approved for commercialization by the FDA; many other proteins are currently being investigated in human clinical trials; other proteins have been discovered and are being investigated in pre-clinical settings.

<sup>&</sup>lt;sup>8</sup> Alanine, Cysteine, Aspartic Acid, Glutamic Acid, Phenylalanine, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Asparagine, Proline, Glutamine, Arginine, Serine, Threonine, Valine, Tryptophan, and Tyrosine.

A "protein" is a biological molecule defined by a specific arrangement of "amino acids." There are 20 naturally occurring amino acids. A single amino acid is encoded by a specific grouping of three deoxyribonucleotide ("DNA") bases (also referred to as "nucleotides"), this grouping of three bases being referred to as a "codon." The arrangement of amino acids or DNA bases is referred to as a "sequence". There are four different DNA bases. There are 64 possible codons (48), with 61 of these actually encoding an amino acid (the other three being "terminator signals"). Thus, several different codons encode the same amino acid.

As an analogy, the four DNA bases can be considered the letters of a four-letter alphabet. In this system, the four letters can be arranged in groups of three (codon) to create twenty words (amino acids), and these words in turn can be arranged to create plethora of unique sentences (proteins). Codons which encode the same amino acid can be considered analogous to synonyms.

For example, the following codons: GCA, GCC, GCG and GCT all encode the amino acid Alamine (i.e., they are all "synonyms" for Alanine). "Conservative" amino acid substitutions (whether substituted naturally within the body or artificially in the laboratory) arise when there is a substitution of one chemically related amino acid residue for another without altering or affecting the resulting protein and its properties; for example, in a given protein, an Isoleucine residue substituted at the position of a Leucine residue might be a conservative substitution.

With these technical concepts in mind, the importance of the doctrine of equivalents to the biotechnology industry in assessing the scope of a patented invention is highlighted.

Proteins can comprise hundreds of amino acid residues. Typically, an innovator who discovers a novel and unobvious protein will seek to determine both the DNA sequence encoding the protein and the amino acid sequence of the protein. The invention is typically claimed as a purified and isolated protein and/or a particular amino acid sequence and/or a particular DNA sequence. Thus, for a protein comprising 400 amino acid residues encoded by a DNA molecule comprising 1200 nucleotides, if an infringer generates the protein comprising the exact amino acid sequence and/or the exact DNA sequence as claimed, such an infringer stands accused of literal infringement of the patented invention as defined by the claim.

But, as implied above, with very insubstantial changes, an infringer can readily manipulate the amino acid and/or DNA sequence to generate a functionally identical protein. For example, if a claim specifies a DNA sequence of 1200 nucleotides, by changing just one nucleotide out of 1200 (e.g., by changing GCA to GCC; both encode Alanine), the encoded protein is identical, but the literal language of a claim relating to a specific DNA sequence has been avoided. From an equitable perspective, the invention has nevertheless been violated. In such a situation, the only manner in which the innovator can be assured that the invention is not violated is via construing the claim in accordance with the doctrine of equivalents.

If required to protect all of the various sequences in order to secure claims which literally cover all such sequences, the innovator would be required to create thousands of various amino acid sequence and DNA sequence combinations. Both the time and financial resources required for such an endeavor for *one* protein would be enormous. Additionally, the PTO would be required to examine *each* of these equivalent sequences, significantly overloading the agency.<sup>6</sup> Applying for a patent for a

<sup>&</sup>lt;sup>4</sup> Adenine (A), Thymine (T), Cytosine (C) and Guanine (G).

<sup>&</sup>lt;sup>5</sup> According to the PTO, it is estimated that the computer search time for one hundred separate sequences, each of which not exceeding several hundred DNA bases in length, is about 15 hours and

protein under such a scenario could become an exercise in futility.

In the absence of the doctrine of equivalents, the innovator who has discovered a novel and unobvious protein which is established to be of therapeutic value would be required to direct scarce financial resources away from developing the product and instead into finding all of the various combinations of DNA substitutions and amino acid substitution in order to literally claim all of these equivalents. This perverts the intent of the patent system, i.e., to rapidly encourage and advance innovation. Critical life-saving and life-enhancing therapeutics would be delayed to advance patent form over innovative substance. This cannot be what the Founding Fathers intended when they authorized the Congress to secure for innovators "... the exclusive Right to their ... Discoveries. ..." (see U.S. Constitution, Art. 1, Sec. 8, cl. 8).

#### II. THE DOCTRINE OF EQUIVALENTS SHOULD BE UTILIZED IN PROPERLY DEFINING THE SCOPE AND MEANING OF THE PATENTED INVENTION

BIO strongly disagrees with the view asserted by petitioner in its petition for a writ of certiorari (Pet.) that the doctrine of equivalents is a "second cause of action for infringement" that is "inconsistent not only with the rest of the Patent Act but with well established statutory policy as well." (Pet. at 17, 22) This position, buttressed by an argument that the doctrine of equivalents permits a claim to be grossly distorted to capture unpatented subject matter, is simply incorrect. The court below and this Court's prior opinion in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950), makes it absolutely clear that the doctrine of equivalents can only

the examiner time for evaluating the sequence search results in about 65 hours. Thus, it is estimated by the PTO, based upon searching 100,000 separate sequences per year, the estimated cost for computer search time for one hundred sequences is \$1,800. See 1184 Official Gazette 111 (March 26, 1996).

be used to capture insubstantial variations of the claimed invention. As the Court stated in Graver Tank:

"The question which thus emerges is whether the substitution . . . is a change of such substance as to make the doctrine of equivalents inapplicable; or conversely, whether under the circumstances the change was so insubstantial that the trial court's invocation of the doctrine of equivalents was justified"

339 U.S. at 610.

And as recently reiterated by this Court:

"The claim 'define[s] the scope of the patent grant', and functions to forbid not only exact copies of the invention, but products that go to 'the heart of the invention but avoid the literal language of the claim by making a noncritical change."

Markman, 64 U.S.L.W. at 4264 (citation omitted).

A patent application comprises a specification (35 U.S.C. § 111) and each specification must "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." 35 U.S.C. § 112 ¶ 2. Because the claims define the "patented invention," it has been asserted that 35 U.S.C. § 271 must be read to mean that there can only be determination of infringement by prohibited acts involving products or processes which fall four-square within the literal language of the claims. Petitioner has thus asserted that the doctrine of equivalents provides a patentee with an ability to encompass, protect and assert "more than is set forth in the claims." Pet. at 22.

Petitioner seemingly views the doctrine of equivalents as a legal "carnival-mirror" which acts to grossly distort the claimed invention. Nothing could be further from the truth, factually or legally. The doctrine of equivalents is a procedural tool that this Court has recognized and has

endorsed for utilization in defining the scope of protection a patent affords when an accused device or process does not fall within the literal construction of a patent claim. It is an essential doctrine which facilitates appropriate claim construction, as was conducted in this case.

The limitations of words, particularly in emerging technologies such as biotechnology, can often do an injustice to the patented invention. Just as courts may at times go beyond the literal language of a statute for a full appreciation of what the words and boundaries of a statute may be, it is essential that courts have the opportunity to look beyond the literal language of a patent claim to gain a full and complete appreciation of the patented invention. A predecessor court of the Court of Appeals for the Federal Circuit has correctly noted in this context that the imprecision of words is more evident with patent claims that it is with statutes. Autogiro Co. of America v. United States, 384 F.2d 391, 398 (Ct. Cl. 1967), cert. denied, 434 U.S. 1051 (1978).

The doctrine of equivalents does not provide protection for more than is set forth in the claims. Indeed, the doctrine of equivalents ensures that the patented invention is appropriately protected.

#### A. The Difference Between The Literal Language Of The Claim And The Accused Device Or Process Must Always Be "Insubstantial"

In understanding the doctrine of equivalents, it is important to recognize that its genesis and development were not predicated upon procedures related to the amendment of patent claims. Instead, the doctrine functions as a valuable tool that provides an equitable procedure for both properly construing the meaning and scope of a claim and in ensuring that the patented invention is not violated in the absence of literal infringement. However, just as it is essential to appreciate the role of the doctrine in construing the meaning and scope of a claim, it is equally crucial to recognize that any departure from the literal claim language cannot be more than "insubstantial." As the majority noted below:

"this court explicitly holds that the application of the doctrine of equivalents rests on the substantiality of the differences between the claimed and accused products or processes, assessed according to an objective standard."

62 F.3d at 1518. This Court provided the same benchmark over 100 years ago, asserting that

"the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself."

Machine Co. v. Murphy, 97 U.S. 120, 125 (1877).

The process for determining whether or not a change is an "insubstantial" change is not subject to a rigid formula. As recognized by this Court, for simple mechanical technology, the determination may often be accomplished and assessed by determining whether the accused devices or processes include substantially the same function, way and result as required by the literal language of a claim

<sup>6</sup> One argument vigorously asserted by petitioner and several amici is the need for absolute certainty in determining patent scope and that abolishment of the doctrine of equivalents and restriction of a patent to the literal scope of the claims is a means to that end. This would, of course, limit infringement to situations where the accused device is identical to the claimed invention. It is worth noting that in two other forms of intellectual property protected by Federal law, copyrights (17 U.S.C. §§ 101-1101) and trademarks (15 U.S.C. §§ 1051-1127), that level of certainty is not provided. Thus, copyright infringement does not require an identical copy, but is found where the accused work and the protected work are "substantially similar." See, for example, Twin Peaks Prod., Inc. v. Publications Int'l Ltd., 996 F.2d 1366 (2nd Cir. 1993). The trademark code standard for infringement is met if the accused mark ". . . is likely to cause confusion, mistake or to deceive." See 15 U.S.C. § 1114(1)(a). It does not require identity between the protected and accused trademark to meet this test. "Confusing similarity" is enough. See McCarthy, Trademarks and Unfair Competition, 2nd Ed., Section 21:3, and cases cited therein. Thus, copyright and trademark law, just like patent law, also recognize that the subject matter to be protected may not be protected at all if insubstantial variations escape infringement.

(see Graver Tank). As was cogently appreciated and articulated by the court below,

"As technology becomes more sophisticated and the innovative process more complex, the function-way-result test may not invariably suffice to show the substantiality of the differences."

by BIO's members can readily be regarded as "sophisticated," and that the process of innovation in our industry is certainly complex, amicus urges the Court to endorse and acknowledge the view articulated by the court below vis-a-vis the limitations of the function-way-result test. In determining the insubstantiality of an accused element, it is not essential that any particular test of analysis be utilized. What is essential is that the analysis objectively focus on whether or not the difference between the accused device or process and the literal language of the claims is "insubstantial."

#### B. Application Of The Doctrine Of Equivalents Is Limited By The Prosecution History Estoppel Doctrine And The Relevant Prior Art

#### 1. Prosecution history estoppel doctrine

The prosecution of a patent application is conducted outside of the public eye. It is a process during which only the PTO and the inventor communicate with each other to the exclusion of any third party (35 U.S.C. § 122; 37 CFR § 1.14), usually in the form of written correspondence, briefs, etc., but sometimes in face-to-face or telephonic meetings (such oral communications are typically summarized in written form by the examiner, and this written summary also becomes a part of the file). However, once a patent is granted and issued by the PTO, all of the correspondence between the PTO and the inventor is available to the public (37 CFR § 1.11). The file which comprises such correspondence can be referred to as the "prosecution history" file.

The prosecution history file allows the public to gain a more complete appreciation and understanding of the patented invention. For example, it is not unusual during the process of patent prosecution that an inventor will make statements which clarify the meaning of a key term, or to amend a proposed claim in order to overcome, for example, a prior art rejection of that claim. In these situations, the inventor's statements and actions create an estoppel which prevents the inventor from recapturing or redefining during patent litigation that which was abandoned or defined differently during patent prosecution. This type of estoppel has been referred to as the "prosecution history estoppel doctrine."

As has been recognized by this Court, a patentee

"is not at liberty now to insist upon a construction of his patent which will include what he was expressly required to abandon and disavow as a condition of the grant."

Sutter v. Robinson, 119 U.S. 530, 541 (1886).

While it is correct that the claims of a patent are intended to give notice to the public as to what is considered by the inventor to be the patented invention, from a practical perspective those who review such claims are potential or actual competitors with the inventor and/or assignee of the patented invention. The value and importance of having the prosecution history file open to the public is that competitors in particular can readily determine what may have been abandoned or disavowed by the inventor during prosecution of the patent. That which has been abandoned or disavowed, even if such would otherwise be equivalent to the literal language of the claims, can be freely practiced by any competitorthe prosecution history estoppel doctrine ensures that the doctrine of equivalents is appropriately narrowed as warranted by what transpired during prosecution of the patented invention.

#### 2. Limitations imposed by the prior art

The prior art, including information which was available prior to the innovator's discovery (and irrespective of whether the innovator knew of its existence and avail-

ability) also serves to narrow application of the doctrine of equivalents.

A precept of our patent system is that one cannot patent that which is in the prior art, e.g., that which is already freely available to the public. Similarly, a patentee cannot assert that an alleged insubstantial variation is within the scope of the claims if such an insubstantial variation would encompass the prior art. Thus, in construing the scope of the claims under a doctrine of equivalent analysis, the prior art serves as an additional boundary on the scope of the patented invention.

While there are no set procedures for determining how the prior art limits the scope of the patented invention, the Court of Appeals for the Federal Circuit has provided guidance as to one mechanism for conducting such an analysis. This can be accomplished by considering a "hypothetical" patent claim sufficient in scope to literally cover the accused device or process. Wilson Sporting Goods v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990); c.f. Conroy v. Reebok Int'l, Ltd., 14 F.3d 1570 (Fed. Cir. 1994). Thus, by constructing such a hypothetical claim and by considering the available prior art, a determination can be readily made as to whether such a claim would have been allowed by the PTO-if such a claim would not be allowable over the prior art, and if the accused device or process is encompassed by such a claim, then the accused device or process cannot be viewed as violating the patented invention.

#### III. THE DOCTRINE OF EQUIVALENTS IS USED TO UNDERSTAND THE SCOPE OF THE PATENTED INVENTION; IT DOES NOT FUNCTION TO COR-RECT A DEFECTIVE CLAIM

Under chapter 25 of the Patent Act of 1952 entitled "Amendment and Correction of Patents," one mechanism provided for correcting defects occurring in patents is reissue. 35 U.S.C. § 251; "Reissue of defective patents." The reissue statute provides a way for the patentee to correct defects occurring in an issued patent, including

defects in the claims when such defects make the "wholly or partly inoperative or invalid." 35 U.S.C. § 251.

Petitioner has argued that the doctrine of equivalents is inconsistent with the reissue process. Pet. at 29-30. As petitioner states, "The Federal Circuit's doctrine of equivalents (indeed, any such doctrine) allows 'corrective' enlargement of patent claims without compliance with the conditions and procedures set forth by Congress for reissue." Pet. at 29.

This argument is based on the misapprehension that the doctrine of equivalents serves the purpose of correcting defective claims. In fact, the doctrine of equivalents is not intended as a mechanism for correcting or enlarging "broken" claims, nor does it serve this purpose. Instead, the purpose of the doctrine of equivalents is to put claims in their proper perspective as one of the tools for understanding a patented invention and its relationship to an accused product or process in the context of an infringement determination. The doctrine of equivalents thus provides a mechanism for looking beyond the literal terms of a claim (rather than correcting or expanding them) toward a complete understanding of the patented invention. It bears repeating that the doctrine of equivalents only permits a claim to reach an accused device or process which varies insubstantially from that claimed. On the other hand, a reissue proceeding under 35 U.S.C. § 251 permits even glaring mistakes to be corrected and, if done within a two-year from issuance time bar, a patented claim can be expanded to encompass substantially more than originally claimed. In short, the reissue process to fix broken patents and the application of the doctrine of equivalents to prevent injustice to the patentee are not in conflict. They are different tools to solve different problems.

A major difference between reissue and the doctrine of equivalents is that the reissue procedure can be used to broaden the scope of a patented invention by ensuring that the claims include subject matter previously excluded from the claims. This occurs when a patentee uses the

reissue procedure to broaden claims and recapture subject matter dedicated to the public in the issued patent (e.g., disclosed in the specification but not claimed) as a result of a defect in the originally issued claims. Because postissuance broadening of a claim has the potential to prejudice innocent parties who reasonably rely upon the scope of a patented invention conveyed by the original claims, safeguards against this potential for prejudice were included in the 1952 Patent Act. 35 U.S.C. § 251, par. 4 and § 252, par. 2; see also, Seattle Box Co., Inc. v. Industrial Crating and Packing, Inc., 756 F.2d 1574 (Fed. Cir. 1985). These safeguards take the form of a two year time limit on the use of the reissue process to broaden claims and a provision for the grant of intervening rights to those who relied to their detriment upon the original claims.

Because the doctrine of equivalents focusing as it does on insubstantial differences does not change the scope of a patented invention, the doctrine does not create the same potential for prejudice posed by the reissue procedure. The safeguards imposed on the reissue process to avoid this potential prejudice are, therefore, not required for application of the doctrine of equivalents.

The reissue allows for correction of a defective claim. The doctrine of equivalents does not focus on any perceived defect in the claim language; rather, the doctrine of equivalents focuses on recognizing the scope and meaning of the patented invention. These are fundamentally different concepts.

IV. THE INTENT OF ONE FOUND LIABLE FOR INFRINGEMENT OF A PATENTED INVENTION IS NOT RELEVANT TO THE DETERMINATION OF LIABILITY

Petitioner argues that those who neither had "nor should have had" knowledge of a patent, or have tried

to design around a patent should not be found liable for infringement (Pet. at 29-30). Petitioner urges creation of a "breathing space" rule (Pet. at 30) which would excuse from liability those who did not take the time to see what their competitors have patented or those who, in essence, tried to get as close as possible to the literal language of the claims by reliance upon "insubstantial" variations. We believe the fallacious nature of such a rule is evident. It would rob the doctrine of all vitality because only the most flagrant technology pirates would be liable. All other "infringers" under the doctrine would be excused.

There is but one type of infringement, i.e., infringement of the patented invention under 35 U.S.C. § 271. While intent may be and often is crucial in the assessment of damages after a determination of infringement, intent has no place in the analysis of infringement. Such a conclusion is not only of judicial necessity, but also of practical necessity. The patented invention cannot be subjected to different types of violation which result in different conclusions of liability. There is no such thing as "innocent" infringement and a patentee can legitimately stop a party from making, using, offering for sale, selling or importing a patented invention even if that party did not know of the existence of the patent. See, Intel Corp. v. U.S. Int'l Trade Comm'n, 946 F.2d 821 (Fed. Cir. 1991).

#### CONCLUSION

Sight must not be lost of the fact that the patent system exists to foster innovation. This goal is best met when the patentee is fairly able to reap the rewards of innovative endeavor.

This Court has pointed out that a patent is among the most difficult legal instruments a lawyer is required to

<sup>&</sup>lt;sup>7</sup>We believe that ir a competitive marketplace, those who do not take the time to unilaterally determine the impact and importance

that a competitor's patents may have on their business cannot reasonably expect a judicial body to correct their own competitive malfeasance.

produce. See, Sperry v. Florida, 373 U.S. 379, 383 (1963) and Topliff v. Topliff, 145 U.S. 156, 171 (1892). The sole purpose of the doctrine of equivalents should be to prevent the draconian result that a patentee, because of the limitations of language, lose all the protection the patent should afford. The doctrine should not require two injustices, i.e., a claim too narrow when literally construed to capture an insubstantial difference and unscrupulous copying, in order to provide relief.

BIO urges this Court to fully support the doctrine of equivalents. Accordingly, this Court should affirm the majority opinion below in its holdings that the standard for determining the scope to which a patent claim is entitled under the doctrine of equivalents is based upon an "insubstantial difference" between the accused device or process, assessed according to an objective standard, and the claimed invention. We further urge this Court to acknowledge that there is no rigid test or formula for determining whether a difference is "substantial." Further, the Court should affirm the holding of the majority below that the intent of one found liable for infringement is not relevant in the determination of such liability.

Respectfully submitted,

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#### In The Supreme Court

United States

OCTOBER TERM 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

Hilton Davis Chemical Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMICUS CURIAE OHIO STATE BAR ASSOCIATION IN SUPPORT OF RESPONDENT

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#### TABLE OF CONTENTS

	Page
TABLE OF CONTENTS	i
TABLE OF AUTHORITIES	ii
INTEREST OF THE AMICUS CURIAE	1
SUMMARY OF ARGUMENT	3
ARGUMENT	4
I. Determining Similarity of an Accused	
Device to the Patented Invention Has	
Long been a Factual Determination for	
the Jury	4
II. The Markman Rule Does Not Alter	
the Manner In Which A Jury	
Determines Equivalence of An Accused	
Device to A Patented Invention	8
III. Petitioner and Supporting Amici Fail	
to Demonstrate Any Public Policy	
Reason for Overturning the Right to	
Jury Determination of Infringement	
Under the Doctrine of Equivalents	10
CONCLUSION	12

#### TABLE OF AUTHORITIES

Cases:
Atlantic Works v. Brady, 107 U.S. 192 (1883) 6
General Electric Co. v. Wabash Appliance Corp., 304 U.S. 364 (1938)
Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950)
Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946)
Markman v. Westview Instruments, Inc., 116 S.Ct. 1384 (1996)
Odiorne v. Winkley, 18 F.Cas. 581 (C.C.D. Mass. 1814)4
Pennwalt Corporation v. Durand-Wayland, Inc., 833 F.2d 931 (Fed. Cir. 1987) 4, 5
Reutgen v. Kanowrs, 20 F.Cas. 555 (C.C.D. Pa. 1804)
SRI International v. Matsushita Elec. Corp. of America, 775 F.2d 1107 (Fed. Cir. 1985) (en banc) 9
Universal Oil Products Co. v. Globe Oil & Refining Co., 322 U.S. 471 (1944) 6
Winans v. Denmead, 56 U.S. (15 How.) 330 (1854)
Statutes:
Patent Act of 1836, 5 Stat. 117, 119, § 65
Patent Act of 1870, 16 Stat. 198, 201, § 265
35 U.S.C. § 1125
35 U.S.C. § 271 5, 6
Other Sources:
R. Lempert, Civil Juries and Complex Cases: Taking Stock after Twelve Years in VERDICT: Assessing the Civil Jury System 181 (R. Litan ed. 1993)

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## BRIEF OF AMICUS CURIAE OHIO STATE BAR ASSOCIATION IN SUPPORT OF RESPONDENT

#### INTEREST OF THE AMICUS CURIAE

The Ohio State Bar Association is an unincorporated association of more than 25,000 members. Its membership includes lawyers, judges and associate members. It speaks on behalf of thousands of practitioners from a wide range of industrial, urban, and rural areas in a populous state, and on behalf of the six hundred members of its Intellectual Property Law Section, many of whom devote their careers largely to the procurement and enforcement of United States patents. The Association carefully guards the right to trial by jury in civil actions, and seeks to defend the use of this well-tested "common-sense" engine of justice against encroachments in the name of purported efficiency or certainty or predictability. This brief is authorized by the Board of Governors of the Association's Intellectual Prop-

erty Law Section and by the Board of Governors of the Association itself. Counsel for Petitioner and Respondent have consented to the filing of this brief.

The doctrine of equivalents is an important adjunct to enforcement of the patent laws and should not be abolished. Other amici (e.g., the United States, the Intellectual Property Owners, the American Intellectual Property Law Association ["AIPLA"]) have stated well the rationale for the doctrine, and this Amicus will not add to those statements.

The doctrine of equivalents should not be applied depending on the conduct, motive or intent of the accused infringer. Other amici have adequately stated the reasons why this limitation upon use of the doctrine proposed by dissenters below should be rejected as contrary to the very concept of uniformity in enforcing patent claims otherwise sought by Petitioner. This Amicus will not further address that question.

This Amicus seeks to address only the Petitioner's challenge to the submission of the equivalence issue to a jury. The Federal Circuit determined, following many years of unbroken precedent, that the question whether an accused product infringes a patent under the doctrine of equivalents is a question of fact to be decided by a jury when a jury demand has been made. Two of the dissenting opinions suggested that the determination of infringement by equivalence should be removed from jury consideration and given to the trial court. Dissent by Plager, J., 62 F.3d at 1543; dissent by Lourie, J., 62 F.3d at 1549. Several amici support the dissenters on this point. This Amicus urges continuance of the present role of the jury in equivalents determinations.

#### SUMMARY OF ARGUMENT

The doctrine of equivalents has long been applied by the courts of the United States through submission of the question of similar or equivalent structure to juries. This well-established practice has continued notwithstanding many revisions of the patent statutes, showing legislative recognition of and acquiescence in the doctrine. The principal cases of this Court clearly characterize equivalence analysis as a question of fact not of law, to be decided by a jury when demanded.

The Markman decision does not alter the accepted practice of submitting to the jury the question of equivalence after the court construes the words of the claims in its instructions to the jury. The doctrine of equivalents is not a separate construction of the patent that draws separate boundaries for the claims. Rather, the doctrine of equivalents assumes that the accused product or process falls outside the boundary drawn by the court in construing the claims, and merely asks the jury to determine whether the beyond-boundary difference in the accused product or process is so insubstantial as to make it equivalent in substance to the patented invention. This determination is not part of construing a written instrument, for which judges are particularly adept, but is a factual determination at which jurors are presumed to excel.

Neither the facts of this case nor the opinions in the court below or the briefs submitted to this Court demonstrate any pattern of substantial injustice or unconscionable results that would justify altering the long-standing doctrine of equivalents. However, certain comments made by dissenters below suggest a hostility to the use of juries in complex cases, a suggestion that should be rejected by this Court as inimical to the fundamental role of juries in all manner of civil actions in this country.

#### **ARGUMENT**

 Determining Similarity of an Accused Device to the Patented Invention Has Long been a Factual Determination for the Jury.

Although Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950), is considered to be the definitive authority for the modern doctrine of equivalents, the concept of putting to the jury the question whether the accused product is so similar to the patented invention as to infringe the inventor's rights has been a part of American patent jurisprudence virtually from the beginning. This concept can first be found in a jury charge of Justice Bushrod Washington, sitting as a Circuit Justice in Reutgen v. Kanowrs, 20 F. Cas. 555 (C.C.D. Pa. 1804), in which George Washington's nephew instructed the jury to determine whether the defendants were using "a machine similar to the one mentioned in the plaintiff's patent and specification." Id. at 556. Similarly, Justice Story, sitting as Circuit Justice in Odiorne v. Winkley, 18 F.Cas. 581 (C.C.D. Mass. 1814), charged the jury to consider "whether the machines used by the defendant are substantially, in their principles and mode of operation, like the plaintiff's machines." Id. at 582. He then defined the material question as "not whether the same elements of motion, or the same component parts are used, but whether the given effect is produced substantially by the same mode of operation, and the same combination of powers, in both machines." Id. Many other early cases requiring findings of similarity or equivalence are cited in Circuit Judge Newman's commentary in Pennwalt Corporation v. Durand-Wayland, Inc., 833 F.2d 931, 957-70 (Fed. Cir. 1987).

The doctrine of equivalents first appeared in a Supreme Court decision in *Winans v. Denmead*, 56 U.S. (15 How.) 330, 342-43 (1853). At that time, the existing patent statute did not formally require distinct claims, but merely required that the patentee

particularly specify and point out the part, improvement, or combination, which he claims as his own invention or discovery.

Patent Act of 1836, 5 Stat. 117, 119, § 6. Thereafter in the Patent Act of 1870, 16 Stat. 198, 201, § 26, Congress amended the critical statutory language to require the patentee to

particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery.

While the 1870 statute is considered the genesis of the principle that the metes and bounds of an invention are set forth in the claims, see, e.g., Pennwalt Corp. v. Durand-Wayland, Inc., supra, 833 F.2d at 959, the previous statute under which the doctrine originated contained closely similar language requiring specificity in setting forth the claimed invention. In comparison, the present statute, 35 U.S.C. § 112, provides:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Nothing in the text of the present statute suggests that the role of the jury in determining whether the accused product is the same as, or insubstantially distinct from, the claimed invention should differ from the manner in which juries were used under the previous patent statutes.

More important than § 112 for defining the manner in which infringement is to be determined is the infringement statute, § 271, which provides that "whoever without authority makes, uses, offers to sell or sells any patented invention . . . during the term of the patent therefor, infringes the patent." This provision, last amended on January 1, 1996, does not say "whoever makes, uses or sells . . . a claimed invention" or "whoever practices any claim of

a patent." Nothing in the statute requires that the factual determination of infringement occur exclusively within the explicit bounds of a claim, even though § 271 has been amended repeatedly since the *Graver Tank* decision—most recently after the Federal Circuit announced its decision in this case. Congress accepts the manner in which infringement is determined under the doctrine of equivalents.

There is thus no reason within the patent statute for this Court to overrule the holding in *Graver Tank* that "[a] finding of equivalence is a determination of fact," 339 U.S. at 609-610, upon which the court below grounded its decision, 62 F.3d. at 1520.

Amicus AIPLA asserts that the seminal Winans decision supports its view that the scope of equivalents is a question of law. To the contrary, Winans held precisely the opposite, namely, that the lower court erred in taking the question of infringement away from the jury because even though there could be no literal infringement of the claims, there was evidence to show that defendant's octagonal railcars achieved substantially the same result as the plaintiff's patented round railcars by substantially embodying his mode of operation. 56 U.S. (15 How.) at 343-44. The Court stated:

It may safely be assumed, that neither the patentee nor any other constructor has made, or will make, a car exactly circular. In practice, deviations from a true circle will always occur. How near to a circle, then must a car be, in order to infringe? May it be slightly elliptical, or otherwise depart from a true circle, and, if so, how far?

In our judgment, the only answer that can be given to these questions is, that it must be so near to a true circle as substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention. It is not necessary that the defendant's cars should employ the plaintiff's invention to as good advantage as he employed it, or that the result should be precisely the same in degree. It must be the same in kind, and effected by the employment of his mode of operation in substance. Whether, in point of fact, the defendant's cars did copy the plaintiff's invention, in the sense above explained, is a question for the jury, and the court below erred in not leaving that question to them upon the evidence in the case, which tended to prove the affirmative.

56 U.S. (15 How.) at 343-44 (emphasis added). Amicus AIPLA seizes upon isolated passages referring to "the law" as somehow supporting its position that the "scope of equivalents" is a matter of law for the judge. To the contrary, in these passages, the Court was merely stating its conclusion, in opposition to that reached by the lower court, that non-literal infringement could be actionable: that it was recognized "in law." This is made clear by putting these passages in context:

Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is

In Graver Tank, Petitioners raised the spectre of uncertainty, asserting that if the doctrine of equivalents were not repudiated, then "the claims of the patent no longer will serve to warn the public of the area closed to it," citing General Electric Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938) and Universal Oil Products Co. v. Globe Oil & Refining Co., 322 U.S. 471, 484-85 (1944), and asserting that businesses will face "fears and apprehensions of concealed liens and unknown liabilities," citing Atlantic Works v. Brady, 107 U.S. 192, 200 (1883), and Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1, 12 (1946). Brief of Petitioners on Rehearing at 60. In deciding the Graver Tank case, this Court made an unequivocal determination that the need for business certainty is an insufficient reason to repudiate the doctrine of equivalents. The business-certainty argument has not changed since then, and the doctrine of stare decisis should dispose of it.

the duty of courts and juries to look through the form for the substance of the invention — for that which entitled the inventor to his patent, and which the patent was designed to secure; where that is found, there is an infringement; and it is not a defence, that it is embodied in a form not described, and in terms claimed by the patentee.

Patentees sometimes add to their claims an express declaration to the effect that the claim extends to the thing patented, however its form or proportions may be varied. But this is unnecessary. The law so interprets the claim without the addition of these words.

56 U.S. (15 How.) at 343 (emphasis added). Here again, the *Winans* Court reserved a role for the jury, not merely to apply the scope of equivalents as set forth by the court, but to look to the substance of the patent and make its own determination of whether the defendant had infringed it, despite the absence of literal infringement.

II. The Markman Rule Does Not Alter the Manner In Which A Jury Determines Equivalence of An Accused Device to A Patented Invention.

This Court held in Markman v. Westview Instruments, Inc., 116 S.Ct. 1384 (1996), that claim construction is purely a question of law to be decided by the court. Claims are construed by the court without reference to the accused product or process. The court instructs the jury on the proper construction of the claims. Then the jury determines whether the accused product or process falls within the scope of the claims as properly construed. This test of literal infringement is a factual determination.

Under the *Markman* rule, the same procedure must occur in cases asserting infringement by equivalents that is prescribed for cases of literal infringement. The court instructs the jury as to the proper construction of the claims. Then the jury determines whether, if the accused product or process does not fall within the literal scope of the claims, the difference between the accused product or process is so insubstantial as to make it equivalent to the patented invention. This is a finding of fact.

Amicus AIPLA erroneously asserts that the doctrine of equivalents should encompass a two-step process in which the trial court first determines the scope of equivalents, and then the jury determines whether the accused product falls within that scope. Such proposed rule (which has no case-law support) contains a serious flaw — it assumes that the doctrine of equivalents operates to draw a boundary which is different than the boundary drawn by the language of the claims. Under such a rule, the judge would describe two boundaries for the jury: a boundary for literal infringement and a wider boundary for infringement by equivalents — a wholly anomalous result which can only confuse a jury.

The doctrine of equivalents does not involve construing the scope of a patent separate from the scope of the claims as literally construed. There is no second boundary to be drawn by the court. Rather, the doctrine of equivalents assumes that the accused product or process falls outside the boundary drawn by the court in its instructions to the jury. If so, then the jury may determine whether the beyond-boundary difference in the accused product or process is so insubstantial as to be equivalent to the claimed invention.

There is nothing inconsistent in assigning to the court the task of construing the claim and then allowing a jury in an appropriate case to determine equivalents. To do otherwise would improperly degrade the process of claim construction. Proper claim construction is performed without reference to the accused device or process. SRI International v. Matsushita Elec. Corp. of America, 775 F.2d 1107, 1118 (Fed. Cir. 1985) (en banc). However, equivalence cannot be determined in a vacuum, without reference to an accused device. The question whether a device falling outside the scope of the claims has such an insubstantial difference as to be equivalent cannot begin to be addressed without consid-

ering the characteristics of the accused device and the scope of the claims as construed by the court. Thus the suggestion of the AIPLA that the court also construe the scope of equivalents, apparently without reference to the nature of the accused device, flies in the face of accepted patent law procedures.

The rationale of the *Markman* decision assigning claim construction exclusively to the court rested upon the premise that courts are more adept than juries at construing written legal instruments. This rationale is inapplicable to the determination whether a product or process is equivalent to the patented invention.<sup>2</sup> Juries are assigned by law and the Constitution the task of determining whether an accused device or process falls within the claim, and similarly they should function at least as well as judges in deciding whether, though not within the claim, the accused product or process is so close as to be equivalent. The latter determination is a question of fact, to be distinguished from construing a claim, as described by Circuit Judge Nies in dissent, 62 F.3d at 1578.

III. Petitioner and Supporting Amici Fail to Demonstrate Any Public Policy Reason for Overturning the Right to Jury Determination of Infringement Under the Doctrine of Equivalents.

Neither the facts of this case, nor the briefs filed by Petitioner or the supporting amici, nor any of the opinions written by the judges of the court below, have presented any concrete instances in which submission of the question of infringement under the doctrine of equivalents to a jury has resulted in a fundamentally unjust verdict, or an anomalous

result when compared to another case, or any example of the theoretical parade of horrors presented by those who would remove the determination of equivalents from a jury. All is speculation, theory, hypotheticals. The doctrine of equivalents is not a new development. Many years have passed in which, if all of the terrible results such as inconsistent application of patents to similar products, lack of certainty, and runaway juries were a natural consequence of allowing juries to consider infringement by equivalents, surely such results would have surfaced somewhere among the many cases decided under the patent laws. Before the longstanding and long-applied principle of Winans and Graver Tank is overruled, a petitioner should be required to demonstrate concretely that the present rule is producing results that are unjust, and that a change will produce more just results. Nothing in this record shows that switching the determination of infringement by equivalents from a jury to the trial judge will improve the quality of justice in patent cases.

The dissenting judges below do make reference to a very unfortunate public policy argument - an argument to which this Amicus takes emphatic exception. The suggestion that juries are too unsophisticated to decide complex issues should be rejected by this Court. In particular, Circuit Judge Lourie's expressed hostility to a jury considering "the greater complexity of today's patented high technology inventions," 62 F.3d at 1549 n. 3, and his statement that an equivalence determination should be reserved to the court because of the need to exercise "discretion," id. at 1549, is a flat condemnation of the ability of juries to decide hard cases and do justice. Juries routinely decide complex matters in many fields of law. They consider voluminous complex financial and economic evidence in securities fraud and antitrust cases, complex scientific forensic evidence in criminal cases, complex medical evidence in personal injury cases, and complex technological evidence in products liability cases. Complexity exceptions to the right to jury trial in a civil action, widely debated in the early 1980's, were never

If the applicability of the doctrine of equivalents to an accused product or process is circumscribed by prosecution history estoppel, then the court can make that determination using its expertise in construing written instruments, and can inform the jury of the limitations imposed by the contents of the prosecution history. This case does not squarely present a question of prosecution history estoppel to this Court.

adopted by this Court. R. Lempert, Civil Juries and Complex Cases: Taking Stock after Twelve Years, in VERDICT: ASSESSING THE CIVIL JURY SYSTEM (R. Litan ed. 1993). To a lesser extent, Circuit Judge Plager's peroration (62 F.3d at 1538) that the decision below is a "virtually uncontrolled and unreviewable license to juries to find infringement if they so choose" assumes that jurors cannot adequately decide when an accused product contains a significant change from the patented invention. He cites no past experience, no cases from many years of doctrine of equivalents jurisprudence, to support his assertion that jury determinations under the doctrine of equivalents are uncontrollable. The right to a jury determination of equivalents should not be overturned on such a thin showing as the record and arguments made in this case.

#### CONCLUSION

For all of the above-stated reasons, the decision of the court below should be affirmed.

Respectfully submitted,

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## BEST AVAILABLE COPY

#### TABLE OF CONTENTS

TABLE OF	CONT	ENTS	i
TABLE OF	AUTH	ORITIES	ii
STATEMEN	TOF	INTEREST	1
SUMMARY	OF AI	RGUMENT	2
ARGUMENT	·		3
I. 1	Introdu	ction	3
	i ]	The Need for Predictability in Determining Patent Rights  Predictability Promotes Licensing Licensing Also Promotes the Progress of the Useful Arts	3 5
	t	What Should be Done With the Doctrine of Equivalents	10
(		The Role of Judge and Jury in the Doctrine of Equivalents	12
]	D. S	Setting the Boundaries of the	
1	E. 1	Doctrine of Equivalents Equitable Thresholds to Assertion of the Doctrine of Equivalents	14
CONCLUSIO			17

#### TABLE OF AUTHORITIES

#### Cases

Beachcombers, Int'l. v. WildeWood Creative Products, Inc.,
31 F.3d 1154 (Fed. Cir. 1994) 11
Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 94 L.Ed. 1097, 70 S.Ct. 854
(1950)
Hilton-Davis Chemical Co. v. Warner-Jenkinson Co., Inc.,
62 F.3d 1512, (Fed. Cir. 1995) (en banc),
cert. granted, 116 S.Ct. 1014, 134 L.Ed.2d 95
(1996)
London v. Carson Pirie Scott & Co.,
946 F.2d 1534 (Fed. Cir. 1991) 9
Markman v. Westview Instruments, Inc.,
64 U.S.L.W. 4263 (April 23, 1996) affirming
52 F.3d 967 (Fed. Cir. 1995) passim
Pennwalt Corp. v. Durand-Wayland, Inc.,
833 F.2d 931 (Fed. Cir. 1987) (en banc),
cert. denied, 485 U.S. 961, 108 S.Ct.
1226, 99 L.Ed. 2d 426, (1988) 14
Roton Barrier Inc. v. Stanley Works,
79 F.3d 1112 (Fed. Cir. 1996) 16

Southwall Technologies v. Cardinal IG Co., 54 F.3d 1570 (Fed. Cir. 1995)
United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 63 S.Ct. 165, 87 L.Ed. 232 (1942)
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Statutes
35 U.S.C. § 251
35 U.S.C. § 252
35 U.S.C. § 285
Other Authorities
Joseph M. Manak, Les Nouvelles, the Journal of the LES, "Decisions Key to Safe Licensing", March
1996
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Intellectual Property, at 2, April 6, 1995

#### STATEMENT OF INTEREST

The Licensing Executives Society (U.S.A. and Canada), Inc. ("LES"), is a non-profit professional organization whose purposes include: encouraging high standards and ethics among persons engaged in domestic and international licensing and transfers of technology and intellectual property rights, and assisting its members in improving their skills and techniques in those fields. LES currently has over 4,000 members in the U.S. and Canada. LES's membership consists of company executives, entrepreneurs, venture capitalists, accountants, patent attorneys, general practice attorneys, government representatives, and consultants, all of whom are engaged in the licensing of intellectual property. Many of its members are trial lawyers who daily grapple with litigation of patents. With this broad-based constituency, LES is directly interested in the impact this Court's decision will have on the licensing of intellectual property, and patents in particular.

The LES viewpoint is one of practicality in the business world, where patents are treated as valuable property rights, much as other property. As with real property, there is a need for certainty in defining the metes and bounds of the *res*, whether for exclusivity, sale, or sharing. For real property, one looks to the face of the deed to find the definition of the property right. For patents, one looks to the scope of the patent as issued by the Patent and Trademark Office. The basic business concern is what certainty can be gleaned from the public record as to the legal limits of ownership, whatever property is involved.

#### SUMMARY OF ARGUMENT

The interests of licensing and public policy are best served by reasonable certainty in the delineation of the legal metes and bounds of a patented invention. The doctrine of equivalents does not, by its existence, create uncertainty. Rather, uncertainty arises due to inconsistent application of the doctrine and excessive fluidity of the criteria used in its application. By improving the analysis used when applying this doctrine, and by clarifying the roles of judge and jury, this Court can add certainty, promote licensing over litigation, and spur competition and innovation.

The Federal Circuit's decision in this case need not be reversed. LES believes that the Federal Circuit's analysis is not fundamentally flawed. Rather, given the nebulous nature of the function-way-result test enunciated in Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 94 L.Ed. 1097, 70 S.Ct. 854 (1950), and the division among the Federal Circuit judges about how best to proceed, this Court's guidance and clarification is necessary to provide badly needed predictability in analyzing the proper scope of patent claims under the doctrine of equivalents.

The trial court is in the best position to set the outer boundaries of the doctrine of equivalents as a corollary to its interpretation of patent claims. *Markman v. Westview Instruments, Inc.*, 64 U.S.L.W. 4263 (April 23, 1996) affirming 52 F.3d 967 (Fed. Cir. 1995). The doctrine currently allows for sufficient consideration of equitable factors such as prosecution history estoppel, copying, or

designing around. Hilton-Davis Chemical Co. v. Warner-Jenkinson Co., Inc., 62 F.3d 1512, 1521-22 (Fed. Cir. 1995) (en banc), cert. granted, 116 S.Ct. 1014, 134 L.Ed.2d 95 (1996). Creation of an equitable barrier to application of this infringement doctrine would add further uncertainty.

Under this Court's and the Federal Circuit's decisions, the jury decides infringement, i.e., whether the accused product or conduct falls within the claims of the patent, after the judge charges the jury as to the proper legal interpretation of the claims. In light of Markman, this instruction should include the outer boundaries of claim scope for purposes of applying the doctrine of equivalents. Because of Markman's result, there simply is no need for an equitable hurdle to application of this doctrine.

The test first enunciated in *Graver Tank* should be modified to recognize both the equitable and legal nature of the doctrine of equivalents, and to establish a framework that will allow reasoned analysis of a patent's claims, and thereby evaluation of the patent's scope.

#### **ARGUMENT**

#### I. Introduction

#### A. The Need for Predictability in Determining Patent Rights

This brief responds in part to Judge Newman's invitation in her concurrence below for "action-oriented industry" to fill "a telling silence on the part of the technology community" by discussing the public interest

aspects of the doctrine of equivalents.<sup>1</sup> 62 F.3d at 1529. LES is industry-oriented. LES submits this brief to inform the Court about the ramifications of the Court's decision in this case for intellectual property licensing.

Far more patents are involved in licenses than in litigation. Competition and the advancement of economic interests are the hallmarks of business. Licensing promotes these business interests far more efficiently than does litigation. Litigation is a necessary weapon in the arsenal of every competitor, but it is rarely if ever business's weapon of choice. If patent litigations number in the hundreds, then licenses number in the thousands to tens of thousands. In part, this is because of the expense and business distraction caused by litigation. It also stems from the desire for certainty in business planning. Litigation by definition is uncertain, as well as costly. Intellectual property management, like other business cost management, requires certainty.

Most recently, this Court's Markman decision emphasized "the importance of uniformity in the treatment of a given patent as an independent reason to allocate all issues of construction to the court." 64 U.S.L.W. at 4269. Without such uniformity, a "zone of uncertainty" would envelop and stifle technological innovation. Id., quoting

United Carbon Co. v. Binney & Smith Co., 317 U.S. 228, 236, 63 S.Ct. 165, 170, 87 L.Ed 232, (1942). As this Court recognized, uniformity of application yields greater certainty; this was the reason the Federal Circuit was established. Markman, 64 U.S.L.W. at 4269. LES believes this Court should aim to achieve greater certainty and uniformity in the application of the doctrine of equivalents, as it has done in the area of claim construction. Increased certainty in this crucial area will promote patent licensing by allowing for reasoned business planning and intellectual property management.

#### 1. Predictability Promotes Licensing

From the licensee's standpoint, a patent license provides for payment for certain rights and avoidance of litigation. From the licensor's standpoint, a patent license provides a payment for giving up the Constitutionally guaranteed right to exclude others from making, using, or selling an invention. But for the licensor and licensee to reach a meeting of the minds, they must agree on the scope of patent rights being granted and received.

To do that, they look to the words of the claims, interpreting them with the aid of the patent's specification, its prosecution history, and the prior art that acts to limit the breadth of claimed subject matter. When measuring the metes and bounds of a patent, the licensing parties must be cognizant of the doctrine of equivalents. The licensee needs to know what rights it has obtained, what scope of activity is permitted, and what business can safely be conducted free from threat of suit. The licensor needs

Unfortunately, most of the commentary about the Federal Circuit's *Hilton-Davis* decision has touched on, *inter alia*, the legal history of the equitable versus legal nature of the doctrine of equivalents in a trial setting. One exception is the article, "Decisions Key to Safe Licensing", by Joseph M. Manak in the March 1996 issue of *Les Nouvelles*, the Journal of the LES.

to know what rights it has granted, where it has invited competition into its field of exclusivity, and what entities will be placed in competition with it. The rights obtained and rights granted (both express and implied) include rights arising from application of the doctrine of equivalents.

When considering whether to acquire a license, the licensee compares his perceived rights under a license to actual or contemplated actions. The competitive, financial, and technological benefits and risks are weighed for a number of courses of action, including (1) licensing, (2) litigating, or (3) developing a competing product outside the scope of the patent's claims (designing around). The ultimate decision of which course to follow requires the parties to judge the outer reaches of the patent's boundaries, the likelihood that the parties will agree to those limits, and the costs of testing (or defending) the patent's limits. To the extent that judgment can be based on a rational, objective foundation, the public interest is served: weak patents are challenged, strong ones are respected, and new technology is developed by "designing around" the patent.

The doctrine of equivalents plays a large role in this evaluation process for at least two reasons. First, as Judge Newman's concurrence observes, "technologic" change is most often incremental:

[T]echnologic advance, like scientific advance, usually proceeds in small, incremental steps, building on what has gone before, building on one's own work and the work of others. The steps, accumulating, may eventually produce the next

generation of technologic progress. Yet each step, viewed alone, may be an insubstantial change. Even minor improvements can displace the originator while adding little to advancing the field. See Besen & Raskind, supra, at 5 & n. 2. It is the insubstantial change that is caught by the law of equivalency.

62 F.3d at 1533. Second, competitive and market forces often require that substitute products come as close to the patented product as possible. These two concerns combine to make consideration of the potential scope of a patent's claims under the doctrine of equivalents of great concern in the licensing transaction.

#### 2. Licensing Also Promotes the Progress of the Useful Arts

Licensing promotes technologic advance in numerous ways. For example, it "allows firms to combine complementary factors of production." U.S. Dept. of Justice and the Federal Trade Commission Antitrust Guidelines for the Licensing of Intellectual Property, at 2, April 6, 1995. It also provides a means for channeling scarce research and development dollars into alternatives and further improvements, rather than litigation aimed at determining the scope of protection. These laudable goals, and others, are aided when a licensor and licensee reach agreement on the scope of rights conveyed.

For example, a clear definition of the scope of a patent allows the parties to place a value on the technology being licensed, usually, but not always, in the form of a royalty. The licensor may use its determination of the scope of rights to evaluate the business risk of other obligations or inducements under the license. For instance, a licensor sometimes takes on the duty to defend or indemnify a licensee against a third party infringement claim. In effect, the licensor is giving an insurance policy that the licensee can practice the licensed technology free from outside interference. The licensor must not only consider the scope of his own patents, but other patents as well. Certainty in application of the doctrine of equivalents allows the licensee to make a reasoned judgment about whether to demand such guarantees, for which it likely will pay a premium.

Delineation of the conveyed scope of rights also allows for more precise valuation of the licensed rights. Through decision-tree analysis and probablistic assumptions, licensing parties can achieve a truer value for the licensed rights, avoiding economic waste and free riding. And of course, in the real world many companies are both licensors and licensees, so that economic interests are often best served by a rule that allows the concerns to be balanced.

For licensing to proceed on a rational basis, both parties need certainty in defining what conduct does or does not infringe the patent's claims. Unfortunately, even the literal words of claims lead to disputes. The doctrine of equivalents adds an element of uncertainty to this process, both for litigation and for licensing.

The doctrine was given some boundaries by the Court's long-standing test articulated in *Graver Tank*. Recently, however, there have been attempts to articulate

an equitable hurdle to assertion of the doctrine of equivalents. London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991). If this mechanism reduces uncertainty (an "innocent" infringer would know that he need be concerned only with the literal words of the claims), it would do so at a very high price. The erection of an equitable hurdle sacrifices desired respect for patent rights by discouraging competitors from learning about existing patents. Moreover, it could actually promote litigation. A patentee would not know infringement was innocent until it challenged the infringing conduct and discovered why it happened. Finally, an equitable hurdle does little to add certainty. The focus merely shifts from the technological distinctions between patent claims and accused products to differentiating between levels of intent.

This case presents the Court with an opportunity to reduce uncertainty further for trial courts, for litigants, and for licensors and licensees who contemplate granting or taking licenses to avoid litigation. The "importance of uniformity" plays a dominant role in licensing. Markman, 64 U.S.L.W. at 4269. For the doctrine of equivalents, however, uniformity in application supersedes uniformity of result. This case should be decided consistent with Markman, lest one set of uncertainties is merely replaced by another. Whether a jury always, sometimes, or never decides equivalents, and under what test, must be reconciled with Markman's conclusion that claim interpretation, an analytical precursor to both literal infringement and infringement under the doctrine of equivalents, is a task for the judge.

## B. What Should be Done With the Doctrine of Equivalents?

This Court has a number of options, including: (1) abolish the doctrine of equivalents entirely; (2) maintain the doctrine but remove equitable considerations; (3) establish an equitable threshold to assertion of the doctrine; or (4) affirm existing practice of allowing jury consideration of equivalents whenever raised, using equitable considerations of the traditional *Graver* test -- the test of "substantial differences" articulated by the Federal Circuit.

Abolishing the doctrine of equivalents, an extreme suggestion, would decrease uncertainty about the metes and bounds of a patent, since parties could rely on the face of the patent. It would encourage vigorous prosecution before the Patent Office as the determinant of the scope of claims. But it would also encourage free-riders to make insubstantial changes to compete with the successful invention. Moreover, with no doctrine of equivalents, technological change would be difficult to account for, as literalism replaced flexibility, and rigidity replaced reasoned analysis. This approach runs counter to the acknowledgement in *Markman* that patent claim construction requires flexibility and reason. 64 U.S.L.W. at 4267-68.

The alternative to the doctrine of equivalents, whose intent is to capture the equitable scope of a patent claim, would be to force a patentee to rely on 35 U.S.C. §§ 251-52, which allow a patentee to broaden the scope of a patent's claims up to two years after issuance. See also 62

F.3d at 1536 (Newman J., concurring) (recognizing the limited utility of this alternative). During prosecution, an applicant typically submits a number of claims of varying breadth, and argues for allowance of the broadest claims. To the extent any claims may be ambiguous, the "patentee can be his own lexicographer" and define the terms to his liking. See, e.g., Beachcombers, International v. WildeWood Creative Products, Inc., 31 F.3d 1154 (Fed. Cir. 1994). This alternative places on the patent applicant the onus of drafting claims to cover even insubstantial, alternative methods of practicing the inventions, and penalizes him with the loss of exclusivity if he misses even one of the insubstantial alternatives.

This position analogizes a patent to a contract. It does not recognize, as this Court has, that "[p]atent construction...'is a special occupation, requiring...special training and practice.'" *Markman*, 64 U.S.L.W. at 4268. LES does not recommend such a radical departure from established precedent and years of established patent practice, with little benefit to offer in return.

Removing all equitable considerations from the doctrine also seems unwarranted. Clearly, as the Federal Circuit notes in its majority opinion below (and all of that court's other opinions recognize as well), an accused infringer's actions have and should continue to play a role in the doctrine's application. 62 F.3d at 1518-20. For example, evidence of copying supports the conclusion of insubstantial change (referred to in some cases as "pirating" the invention). Removing equity, while adding predictability, would eliminate flexibility, reason, and judicial discretion to remedy civil wrongs. Predictability,

while necessary and laudable, should not come at the expense of justice.

Placing an equitable hurdle in front of a patentee suffers from similar drawbacks. As discussed above, an equitable hurdle leads to equally uncertain results. For example, an equitable hurdle could lead to differing results for identically-positioned accused infringers. One accused infringer may be found liable because it was aware of the patent when adopted certain portions of the patented technology, while a second is not liable because it does not search out competitors' patents. Resolution of the myriad unanswered questions that would apply to this equitable hurdle would yield uncertainty for years to come, as the boundaries of such a test were established. Moreover, creating this equitable hurdle would lead to a result tantamount to abolishing the doctrine altogether.

Existing practice, which allows a jury to consider the doctrine wherever properly raised by a party, remains the route that best balances certainty with justice. Moreover, this Court can clarify the Graver Tank test to provide better guidance for when and how differences between the claims and the alleged infringement will be adequate to avoid infringement.

## C. The Role of Judge and Jury in the Doctrine of Equivalents

Historically, one of the more volatile areas of patent law has been determining which issues are for the jury and which are reserved for the court. *Markman*, 64 U.S.L.W. at 4265-67. A typical patent case has many issues, such

as anticipation, obviousness, enablement, best mode (all validity issues), inequitable conduct, infringement, and damages. The case law for years could at best be described as lacking consistency, with the allocation of some issues more clear than others. For example, the jury decides infringement, Markman, 64 U.S.L.W. at 4265, but the court decides if an injunction is entered against the infringing activity. The jury decides the quantum of damages, but the court decides if those damages are enhanced and in what amount. The jury decides the factual issues underlying an assertion of obviousness, but the court decides the ultimate question of validity. Other issues are less clear because of lack of precedent or LES believes that a clear conflicting precedent. delineation of the respective roles of judge and jury will provide licensing professionals with the ability to obtain legal advice sufficiently definite to allow reasoned business decisions.

LES will leave to others the question of whether there is a Constitutional right to a jury in this case, although this Court's decision in *Markman* may have settled that question. See id. at 4268. If the doctrine of equivalents is for the jury, it should be submitted with established boundaries for the patent claims, as set by the trial court under *Markman*. A jury can then decide equivalents based on a reasoned set of judicial principles.

#### D. Setting the Boundaries of the Doctrine of Equivalents

A desirable step in reducing the uncertainty of a jury deciding the doctrine of equivalents is to have judicial outer boundaries for application of the doctrine in a given case. Rules to accomplish this are already in place. For example, Pennwalt Corp. v. Durand-Wayland, Inc., 833 F.2d 931 (Fed. Cir. 1987) (en banc), cert. denied, 485 U.S. 961, 108 S.Ct. 1226, 99 L.Ed. 2d 426, (1988) requires an equivalent to be proved for each element of a claim not literally satisfied; Wilson Sporting Goods, Co. v. David Geoffrey & Associates, 904 F.2d 677 (Fed. Cir. 1990), cert. denied, 498 U.S. 992, 112 L.Ed. 2d 547, 111 S.Ct. 537 (1990) requires the fact finder to conceive a literal claim that covers the accused infringement, then compare that claim to the prior art to see if that "hypothetical" claim could be valid (mimicking patent prosecution); and Southwall Technologies v. Cardinal IG Co., 54 F.3d 1570 (Fed. Cir. 1995) clarifies the limiting effect of a patent's prosecution history.

Collectively, these cases provide a framework for defining the outer boundaries of a patent claim. With the Markman claim construction holding, these existing cases can be used to instruct a jury about the potential range of available equivalents. This approach would dovetail with Markman: since claim interpretation is a legal question for the judge, the judge should logically charge the jury as to both legal interpretation of the claims and the outer boundaries of the claims under the doctrine of equivalents. In setting the outer boundaries, the trial judge may

consider the types of claim elements involved. For example, in this case, the claim element of pH is well known, with accepted methods of testing to determine if the accused infringement is within the range of 6 to 9. With or without the word "approximately", the trial judge may decide that as a matter of law 5 cannot be 6 either literally or under the doctrine of equivalents. If the trial judge decides that 5 may be 6, then the jury would decide whether it should be, based on the evidence presented.

# E. Equitable Thresholds to Assertion of the Doctrine of Equivalents

Under the approaches discussed thus far, an innocent infringer who did not copy a patent, was unaware of a patent, conducted independent research and development and/or attempted to design around a patent in good faith in reliance on the literal words of the claims could be just as subject to the doctrine of equivalents as a deliberate pirate. Of course, all this is also true of a literal infringer. The deliberate pirate's additional punishment comes if willful infringement is found and a case is judicially declared "exceptional." 35 U.S.C. § 285. The patentee may then be entitled to enhanced damages.

For a licensor, a mandatory-for-the-jury equivalents rule may result in licensing solely to avoid uncertain charges of infringement. But it is not the doctrine that yields this result. Rather, it is the lack of predictability of its application. Licensees may feel compelled to pay royalties in doubtful situations rather than risk the high cost of defending against a weak patent.

Requiring the trial judge, rather than the jury, to determine patent claim boundaries for purposes of the doctrine of equivalents would be consistent with those cases that focus on equivalents as a means to stop "pirates", "unscrupulous copyists", and "fraud". Non-lawyers generally have no difficulty with the concept that such behavior may be subject to liability. Their difficulty lies in the uncertainty of liability, even where such behavior exists. This Court determined that "all issues of construction" are for the trial court. Markman, 64 U.S.L.W. at 4269. Ceding this additional responsibility to the trial judge, when equivalents is raised, would be consistent with Markman and would foster predictability.

This Court's long-standing test in Graver of "substantially the same function in substantially the same way to achieve the same result" has been applied for many years. The fractured decision issued by the Federal Circuit has increased uncertainty in the application of this useful and vital doctrine. A later Federal Circuit decision has confused matters further. Roton Barrier Inc. v. Stanley Works, 79 F.3d 1112 (Fed. Cir. 1996). The existing confusion highlights the need for a clear pronouncement by this Court as to the appropriate test, including what, if any, role equitable factors play in the doctrine of equivalents analysis. That test need not deviate substantially from existing precedent. Rather, this Court need only look to the tests for equivalence already in place, see supra pp. 13-14, and determine whether these decisions provide sufficient flexibility for the applicability of this doctrine.

#### CONCLUSION

The trial court should decide not only legal claim interpretation, but also the outer boundaries of the doctrine of equivalents, using established principles. If equitable factors are to be considered at all, they should be applied as part of the doctrine of equivalents, with guidance from the trial judge. There simply is no reason to remove the jury from its traditional role of deciding the factual issues of whether an accused product or process falls within the claims, as interpreted and cabined by the trial judge.

As an organization of licensing professionals, LES believes a rule following this analytical approach would most favor uniformity of application, predictability, certainty, and competition. The decision of the Federal Circuit need not be reversed; but clear guidance from this Court should be provided.

Respectfully submitted,

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## In the Supreme Cdurt

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OF THE

### **United States**

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

HILTON DAVIS CHEMICAL Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### BRIEF OF AMICUS CURIAE CHIRON CORPORATION IN SUPPORT OF RESPONDENT

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## TABLE OF CONTENTS

		Page
TABLE O	F AUTHORITIES	iii
STATEM	ENT OF INTEREST	1
SUMMAR	RY OF ARGUMENT	2
ARGUME		5
DI	HE BIOTECHNOLOGY INDUSTRY EPENDS ON A HEALTHY DOCTRINE EQUIVALENTS	5
A.		5
В.	Loss of the Doctrine Would Be a Step Backwards in the Movement to Provide Effective International Patent Protection	10
C.	The Doctrine of Equivalents Is Integral to United States Patent Law and Is Compatible with Particular and Distinct Claiming	11
D.	The Public Interest in Biotechnology Development Would Be Impaired If the Doctrine Were Eliminated or Cut Back	14
E.	Equivalents Must Include Later-Discovered Equivalents	18
F.	Absolute Certainty in Claim Interpre- tation Is an Unattainable Goal	
	an Chattamadic Goal	19

## TABLE OF CONTENTS

		2 46.0
II.	DETERMINATION OF INFRINGEMENT UNDER THE DOCTRINE OF EQUIV- ALENTS IS A QUESTION OF FACT, BASED ON OBJECTIVE CRITERIA, THAT MUST BE TRIED TO THE JURY	21
		21
	A. Infringement Is a Question for the Jury	21
	B. The Existence of Infringement by Equivalents Should Be Based on Objec-	
	tive Criteria	24
III.	AS MOST APPLICATIONS ARE AMENDED, ADOPTING PETITIONER'S POSITION ON PROSECUTION HIST-ORY ESTOPPEL WOULD RESULT IN A DE FACTO ELIMINATION OF THE	
	DOCTRINE OF EQUIVALENTS	26
CONC	LUSION	30
APPEN	NDIX	la

## TABLE OF AUTHORITIES

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	Page(s)
Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991)	16-17
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## TABLE OF AUTHORITIES

## CASES

	Page(s)
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### TABLE OF AUTHORITIES

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Page(s)
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Experiences in Japan, GAO/GGD-93-126	
(July 1993)	n.4, 26

## In the Supreme Court

OF THE

## **United States**

OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

ν.

HILTON DAVIS CHEMICAL Co., Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

#### BRIEF OF AMICUS CURIAE CHIRON CORPORATION IN SUPPORT OF RESPONDENT

#### STATEMENT OF INTEREST

Founded in 1981 by scientists at the University of California, Chiron Corporation ("Chiron"), with more than seven thousand employees, is the world's largest biotechnology company. Chiron applies biotechnology and other techniques of modern biology to develop products intended to lower the overall cost of healthcare and improve the quality of life by diagnosing, preventing, and treating disease. To carry out this mission, Chiron invests heavily in biological

research. Last year, Chiron spent over \$300 million on research and development; in the past five years, Chiron's research and development expenditures averaged nearly 40 percent of its annual revenues. Chiron's inventions include the first genetically engineered vaccine for hepatitis B, the first drug to treat multiple sclerosis, blood tests used worldwide to screen donated blood for HIV (the virus that causes AIDS) and hepatitis C virus, drugs to treat cancer, and a genetically engineered form of the whooping cough vaccine which eliminates the risks to children of the traditional vaccine.

As do other biotechnology companies, Chiron depends on patent protection to achieve adequate returns on its research outlay to encourage stockholder investment. Chiron now owns over two thousand United States and foreign patents. Chiron has also taken a lead role in litigating issues related to biotechnology patent protection, including both infringement actions against companies that seek to use its patented technologies without a license and appeals from Patent and Trademark Office ("PTO") decisions related to issues of patentability for biotechnology inventions. See, e.g., In re Bell, 991 F.2d 781 (Fed. Cir. 1993); Chiron Corp. v. Abbott Labs., Inc., 902 F. Supp. 1103 (N.D. Cal. 1995); cf. In re Deuel, 51 F.3d 1552 (Fed. Cir. 1995) (appearing on behalf of Amici). From its vantage point on the cutting edge of biotechnology law, Chiron has a unique perspective on the necessity of the doctrine of equivalents to ensure adequate protection for biotechnology inventions.

#### SUMMARY OF ARGUMENT

The doctrine of equivalents fills a critical role in United States patent law. Since at least 1853, inventors, industries,

and their patent counsel have benefited from the application of the doctrine to "temper the unsparing logic" of literal infringement. By deterring infringement through insubstantial alterations to a patented invention, the doctrine has protected inventors' intellectual property rights and ensured fair returns on their investments in innovation, without creating uncertainty about the scope of patents.

The biotechnology industry and the consumers of the industry's medical innovations benefit from a healthy application of the doctrine of equivalents. Patent protection for biotechnological inventions has attracted investment capital to the industry, making possible the research necessary to discover and develop life-saving and life-improving medical treatments at a time when public funding for research is on the decline. Because of peculiar features of biotechnology inventions, and because of the law that the Federal Circuit has developed to deal with those inventions, the doctrine of equivalents is crucial to protect biotechnology inventions adequately. Without such patents, however, the industry would be unable to attract investment, and could not continue the research necessary to develop new treatments and save lives.

Biotechnology patents also illustrate the need for the doctrine of equivalents to protect patentees' property rights against loss from alterations found to be equivalent after a patent is filed. Biotechnology presents two such problems. First are modifications that have no effect on an invention, such as certain substitutions of one amino acid for another in a large protein molecule. Allowing later-discovered modifications such as these to avoid infringement could obliterate the value of an inventor's patent grant. Second are improvements that build upon an invention, adding additional features or properties. In the case of improvements, the improvement itself may be patentable.

Written consent to the filing of this brief has been obtained from Petitioner and Respondent, and is lodged herewith.

That fact, however, should not limit the rights of the inventor whose basic invention is being exploited.

The loss of the doctrine of equivalents, or a substantial reduction in its scope, would be a serious blow to the biotechnology industry's viability. It would not, however, provide the certainty in claim interpretation that Petitioner seeks. Inherent limits in the ability of language to describe "the heart of an invention" preclude absolute certainty regarding the scope of patent claims, even in cases of literal infringement. Without the doctrine of equivalents, patent attorneys would attempt to protect against insubstantial alterations to an invention by blurring the borders of their claims, making literal infringement determinations even more difficult. Moreover, if patent attorneys could no longer rely on the doctrine of equivalents, the number of claims per patent would rise, as would the complexity of each claim. Parties seeking to determine whether they infringe a patent would be buried in an avalanche of information, and would have more difficulty drawing conclusions about infringement than they do today.

As the brief of the Solicitor General notes, it is the policy of the United States government to encourage other countries to adopt a doctrine of equivalents as healthy as our own. A very recent decision by the High Court in Osaka, Japan shows that Japanese courts are turning to our view. In light of the changes occurring internationally, and encouraged by the United States, it would be ironic for this Court now to limit dramatically a doctrine which is recognized as a cornerstone of United States industrial policy.

Anyone who chooses to practice an invention on the borders of its claims takes a risk. The doctrine of equivalents, which states only that insubstantial alterations to an invention will not eliminate infringement, does little to increase that risk or make it less predictable. Nor does application of the doctrine by juries. Infringement is, and

has always been, a question for the jury. In addition, application of the doctrine should not depend on equitable factors. A rule that allowed only "good" plaintiffs to sue "bad" defendants under the doctrine would promote, rather than lessen, uncertainty.

Petitioner asks this Court to extend the application of prosecution history estoppel, a long-established limit on the doctrine of equivalents, beyond its proper circumstances. Prosecution history estoppel prevents a patentee from using the doctrine of equivalents to recapture subject matter that would not have been patentable over prior art. Petitioner, however, would find an estoppel whenever there was an amendment, regardless of its purpose. As most patent applications are amended, Petitioner's proposal would amount to a de facto elimination of the doctrine of equivalents. Such a rule has no basis in this Court's decisions and would serve no useful purpose.

#### ARGUMENT

- I. THE BIOTECHNOLOGY INDUSTRY DEPENDS ON A HEALTHY DOCTRINE OF EQUIVALENTS.
  - A. Industries and Inventors Rely on the Doctrine: Abolition or Limitation Would Be a Drastic Change in Patent Law that Should Be Made, If at All, by Congress.

The doctrine of equivalents has been an integral part of the United States patent system for nearly a century-and-a-half, since this Court decided Winans v. Denmead, 56 U.S. (15 How.) 330 (1853). In subsequent years, this Court's decisions repeatedly affirmed the vitality of the doctrine and rejected efforts to limit its scope. See, e.g., Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 339 U.S. 605, 608-09 (1950) (collecting cases); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 415 (1908) (refusing

to limit the doctrine's applicability to "pioneer" inventions). Just last month, in Markman v. Westview Instruments, Inc., 64 U.S.L.W. 4263 (U.S. Apr. 23, 1996), this Court again reiterated the importance of the doctrine, noting that a patent claim "functions to forbid not only exact copies of an invention, but products that go to 'the heart of the invention but avoid the literal language of the claim by making a noncritical change.' " Id. at 4264 (quoting H. Schwartz, Patent Law and Practice 82 (2d ed. 1995)).

The long-established pedigree of the doctrine of equivalents puts individuals on notice that "to copy the principle or mode of operation [described in a patent], is an infringement, although such copy should be totally unlike the original in form or proportions." Winans, 56 U.S. at 342; see also Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) (finding infringement "by a device in which there is no substantial departure from the description in the patent"). Patentees and accused infringers alike anticipate that the doctrine will be used to determine questions of infringement. Patentees rely on the doctrine when drafting their claims. Patent attorneys, who interpret patent claims according to familiar rules of patent interpretation, which include a doctrine of equivalents, apply this law every day to ascertain properly the scope of a claimed invention. Potential infringers also must consider the doctrine when evaluating whether to engage in conduct that may infringe a patent.

The decision to practice a patented invention near the borders of its claims is a calculated risk, requiring no more care than in analogous areas of the law. Application of the "substantial differences" test used by the majority of the court below in this case is no less certain, for example, than application of a "reasonableness" test found in ordinary tort law. Parties must make judgment calls, and patent attorneys, schooled in claim interpretation and familiar with the technology involved in the patent, are eminently able to

make such determinations. That they may sometimes be wrong is no reason to eliminate or severely limit the doctrine. They are also sometimes wrong in opining on literal infringement. See, e.g., Transmatic, Inc. v. Gulton Indus., Inc., 53 F.3d 1270, 1278-79 (Fed. Cir. 1995).

Elimination or limitation of the doctrine of equivalents would result in a number of predictable adverse consequences. First, patentees, unable to rely on the doctrine of equivalents, would claim a greater number of variants of their inventions to attempt to gain protection against insubstantial changes. Such additional disclosures could cause an explosion in the verbiage a patent contains. The Court of Customs and Patent Appeals noted that "[t]o require such a complete disclosure would apparently necessitate a patent application or applications with 'thousands' of examples . . . along with information as to whether each exhibits [the property of the invention]." In re Angstadt, 537 F.2d 498, 502 (C.C.P.A. 1976). Because the additional information disclosed would consist of insubstantial variations, there would be little corresponding public benefit from this disclosure, if any. Instead of reasonable notice of the scope of claims (including equivalents), competitors would be buried in "an avalanche of trivial information—a result that is hardly conducive to informed decisionmaking." TSC Indus., Inc. v. Northway, Inc., 426 U.S. 438, 448-49 (1976) (finding that financial disclosure in too much detail provides investors less useful information).

Practices in Japan, where patents traditionally have been subject to narrow literal interpretations, substantiate this fear. See U.S. General Accounting Office, Intellectual Property Rights: U.S. Companies' Patent Experiences in Japan, GAO/GGD-93-126, at 28 (July 1993) ("Under Japanese patent practice, patent claims are construed as narrowly as possible."). Whenever a patent of value is published, competitors of the patentee will file "excessive numbers" of

patents claiming minor variations, a practice known as "patent flooding." Id. at 18. Without a doctrine of equivalents, competitors would do the same in the United States, to hem in important inventions and extort a cross-license at an unfair price.

Second, loss of the doctrine of equivalents would provide added incentive for patentees to blur the boundaries of their inventions with broadening terms and imprecise adjectives. See, e.g., Eibel Process Co. v. Minnesota & Ontario Paper Co., 261 U.S. 45, 66 (1923) (using "substantial" and "high" to describe a patentable improvement to a papermaking machine); Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 796 F.2d 443, 450 (Fed. Cir. 1986) (claiming a "smooth" contact lens), cert. denied, 484 U.S. 823 (1987). See generally 2 D. Chisum, Patents § 8.03[3][c] (rev. ed. 1995) (discussing words of degree and relational terms). Literal infringement analyses, already difficult, would become more so.

Third, abolition of the doctrine of equivalents would increase the number of claims per patent, increasing the burden on an already overworked PTO. During examination, a patent examiner must evaluate whether each claim is definite, enabled by the specification, and supported by a written description. 35 U.S.C. § 112. In addition, the examiner must compare each claim to the prior art to determine whether the art anticipated or rendered obvious the claim. 35 U.S.C. §§ 102, 103. The additional work created by vastly greater numbers of claims per patent would increase the time from the filing of a patent application to issuance of a patent. The impact on inventors would be exacerbated by the recent change in the term of patent protection, formerly seventeen years from the date the patent issues, now twenty years from the date of filing. Pub. L. No. 103-465, tit. V, § 532(a)(1), 1994 U.S.C.C.A.N. (108 Stat.) 4809, 4983-4984 (1994) (codified as amended at 35 U.S.C. § 154).

Biotechnology patents, which now may take eight or ten years to issue,<sup>2</sup> could well take fifteen years instead, leaving the patentee with only a few years of protection.

If this Court were to limit the doctrine of equivalents, patents obtained in reliance on the doctrine would become valueless. Indeed, very few patents are granted with claims as originally filed. General Accounting Office, supra, at 17; Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1363 (Fed. Cir. 1983). Many patentees have accepted claim language amendments suggested by the PTO because current law provides adequate coverage and does not create an estoppel. If any change in the law is appropriate, it should be made by Congress, which can adopt appropriate grandfathering legislation.

Lastly, and contrary to the patent law's objective of encouraging the public disclosure of useful inventions, the loss of the doctrine of equivalents would inevitably cause companies to rely more heavily on trade-secret protection for their inventions. "The interest of the public is that the bargain of 17 years of exclusive use in return for disclosure be accepted." Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 489 (1974). Faced with uncertainty that their patents may be rendered "hollow and useless" by only strict literal reading, or that prosecution history estoppel would nullify the doctrine, inventors will be forced to limit disclosure of certain inventions, especially in unpredictable arts such as biotechnology. See Angstadt, 537 F.2d at 503. The public interest would suffer from the delay in industry's ability to build on patented inventions.

<sup>&</sup>lt;sup>2</sup>See, e.g., In re Ochiai, 71 F.3d 1565, 1566 (Fed. Cir. 1995) (seventeen years from filing to final rejection by the PTO and three more years for appeal, which allowed the patent to issue); In re Brana, 51 F.3d 1560, 1562 & n.2 (Fed. Cir. 1995) (eight years from application to appeals court decision reversing PTO rejection); Chiron Corp., 902 F. Supp. at 1108 (eight years from filing to issuance).

#### B. Loss of the Doctrine Would Be a Step Backwards in the Movement to Provide Effective International Patent Protection.

It would be ironic for this Court now to cut back the doctrine of equivalents. As the brief of the Solicitor General notes, it has been the policy of the United States government to encourage other countries to adopt an effective doctrine of equivalents like our own. Just recently, a decision by the High Court in Osaka, Japan shows that Japanese courts are turning to our view. See T. Takenaka, New Policy in Interpreting Japanese Patents (in press, submitted in the appendix to this brief).3 Genentech, a large United States biotechnology company, sued a Japanese pharmaceutical company for infringing Genentech's Japanese patents for a protein called t-PA, which is comprised of a chain of four hundred thirty-nine amino acids. The Japanese company's product differed from Genentech's claimed invention by only one amino acid and functioned almost identically. Applying traditional Japanese law of infringement, which focuses exclusively on literal claim language, see Takenaka, supra; General Accounting Office, supra, at 28, the Japanese trial court found no infringement. In an opinion that reflects fundamental changes in Japanese patent law, the Osaka High Court reversed, based on reasoning largely similar to that of the majority of the Federal Circuit in the decision below in this case. See Takenaka, supra. That the rest of the world is adopting policies this Court has long affirmed emphasizes the soundness of U.S. law.4

#### C. The Doctrine of Equivalents Is Integral to United States Patent Law and Is Compatible with Particular and Distinct Claiming.

Since 1853, when this Court decided Winans, the doctrine of equivalents has been a necessary and integral part of United States patent law. In Winans, Justice Curtis, a former patent practitioner, found the doctrine necessary to carry out Congress' constitutional mandate "To Promote the Progress of Science and Useful Arts." U.S. Const., art. I, § 8, cl. 8.

The exclusive right to the thing patented is not secured, if the public are at liberty to make substantial copies of it, varying its form or proportions. And, therefore, the patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms.

Winans, 56 U.S. at 343. The Winans majority endorsed the application of the doctrine in the face of the identical arguments now raised by Petitioner and several Amici, that the doctrine of equivalents is inimical to the policy of providing notice about the scope of patent claims. See id. at 347 (Campbell, J., dissenting).

<sup>&</sup>lt;sup>3</sup>Dr. Takenaka's remarks, including her translation of the Japanese High Court decision that she discusses, will be published in Volume 3, Issue 2, of the CASRIP Newsletter (Summer 1996).

<sup>&</sup>lt;sup>4</sup>In its 1993 study of patent practice in the United States, Europe, and Japan, the General Accounting Office surveyed over three hundred companies, including top patent holders in the chemical, semiconductor, and biotechnology industries. General Accounting Office, supra, at 19.

When asked to comment about the patent protection they receive in Japan, 41 percent reported significant problems with the narrow scope given these patents. Only 5 percent, however, criticized the scope of United States patent protection, which includes the doctrine of equivalents. Id. at 28. Efforts to harmonize the patent laws of the United States, Europe, and Japan call for Japan to adopt a United States-like doctrine of equivalents, not vice-versa. Id. at 73 tbl. 6.2.

Although the doctrine has never been expressly part of any of this nation's Patent Acts,<sup>5</sup> it plays a fundamental role in United States patent laws. As Judge Learned Hand explained:

[A] boundary [in patent claims] cannot be drawn with precision; and the draftsman of claims is always in something of a dilemma—the dilemma which has led to the very "doctrine of equivalents" itself.... On the one hand, if he confines himself rigidly to those elements as they appear in the specifications, he deprives the patent of any practical value, because it is always, or almost always, possible to change the form of these as they appear, and yet cull the full advantage of the discovery. On the other hand, if he too much abandons the elements as they are disclosed, he will not "particularly point out \* \* \* the part \* \* \* or combination which he claims": i.e. he will have so far generalized the disclosure, that the combination of any elements which will effect the same result will be covered. The patent will then pro tanto stifle progress in the art and be invalid. It is impossible in practice to emerge from this embarrassment without some measure of compromise; the elements as they appear in the claims must be clearly enough identified with elements as they appear in the manifold to be "substantially" limited by their description, verbal and pictorial. Yet

the claims must be given enough scope to cover "substantially similar" variants.

Royal Typewriter Co. v. Remington Rand, Inc., 168 F.2d 691, 693-94 (2d Cir.), cert. denied, 335 U.S. 825 (1948).

Petitioner argues that the doctrine of equivalents is incompatible with the current Patent Act, particularly with 35 U.S.C. section 112, which requires that a patentee "particularly point[] out and distinctly claim[]" his invention. There is no incompatibility. As the Federal Circuit, which has special expertise in this area, has explained, a patentee can only draft claims that are "as precise as the subject matter permits." See, e.g., North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1580 (Fed. Cir. 1993), cert. denied, 114 S. Ct. 1645 (1994); see also Eibel Process, 261 U.S. at 65-66. It may not be possible to describe the inventor's technical concept with absolute precision, and a patent's claims will be allowed if they "reasonably apprise those skilled in the art of the scope of the invention." Credle v. Bond, 25 F.3d 1566, 1576 (Fed. Cir. 1994) (quoting Miles Labs., Inc. v. Shandon, Inc., 997 F.2d 870, 875 (Fed. Cir. 1993)).

Section 112, then, establishes only a "reasonableness" standard for claim precision, one that must be evaluated according to the facts and circumstances of each case. This "reasonableness" standard would be inconsistent with a legal regime that did not allow for infringement by equivalents. No purpose would be served by a requirement for "reasonable" precision in the description of an invention if the law also required absolute identity between the claims and the accused device for a finding of infringement.

The Patent Acts have never expressly proscribed "literal" infringement either. The relevant section of the current Act says only that "whoever without authority makes, uses, offers to sell or sells any patented invention . . . infringes the patent." 35 U.S.C. § 271(a). The Act defines "invention" through section 112, which states that an applicant must claim "the subject matter which the applicant regards as his invention." 35 U.S.C. § 112.

#### D. The Public Interest in Biotechnology Development Would Be Impaired If the Doctrine Were Eliminated or Cut Back.

"The biotechnology industry has been one of the success stories in U.S. industry, creating new jobs and pioneering exciting breakthroughs that improve our way of life." 141 Cong. Rec. S15221 (daily ed. Oct. 17, 1995) (statement of Sen. Hatch). "In 1994, sales of biotechnology products totaled close to \$8 billion, and the Department of Commerce estimates that biotechnology will be a \$50 billion industry by the year 2000." 141 Cong. Rec. S7300-01 (daily ed. May 24, 1995) (statement of Sen. Harkin). Biotechnology products include insulin to treat diabetes, drugs to treat AIDS and cancer, human growth hormone to treat dwarfism, and diagnostic tests to ensure the safety of the world's blood supply against viruses such as those causing hepatitis and AIDS.

"The biotechnology industry relies heavily on patent protection in recouping the costs of bringing new drugs to the market. Furthermore, adequate patent protection is vital in persuading investors to provide the necessary capital to the industry." 141 Cong. Rec. S15221 (daily ed. Oct. 17, 1995) (statement of Sen. Hatch). Cutting back the doctrine of equivalents would devastate the biotechnology industry's capacity to protect the value of its inventions. Any such change would dramatically inhibit the industry's ability to conduct the extensive research and development required to deliver new life-saving products to the public.

To understand the importance of the doctrine of equivalents to biotechnology patents, a modicum of background in biology is helpful.<sup>6</sup> All living organisms contain genetic material, usually made of DNA (deoxyribonucleic acid). Smaller molecules, called nucleotides, are arranged in a DNA molecule like

beads on a string. Only four nucleotides, typically labeled A, T, C, and G, comprise DNA, but a single strand of DNA may have thousands or millions of nucleotides.

DNA contains encoded information that living cells use to build proteins. Proteins are molecules that help to perform a wide variety of functions in living organisms, from digesting food to forming muscles to helping the immune system combat infections. Like DNA, proteins can be described as linear (chain-like) molecules. All protein chains are made from combinations of twenty smaller molecules, called amino acids. The sequence of nucleotides in DNA "encodes" the sequence of amino acids in a protein. Each group of three nucleotides in a DNA sequence "codes" for one amino acid. In this way, a long molecule of DNA describes a long protein molecule. Living cells have a complex machinery that "reads" a molecule of DNA, taking the sequence information from the DNA molecule and building the corresponding protein. A "gene" is simply a sequence of DNA that encodes for a particular protein.

The doctrine of equivalents is essential for biotechnology patents claiming particular genes or proteins. In biotechnology patent cases, the Federal Circuit has developed a rule that an inventor cannot claim a gene without disclosing its sequence. Fiers v. Revel, 984 F.2d 1164, 1170 (Fed. Cir. 1993); Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 1206 (Fed. Cir.), cert. denied, 502 U.S. 856 (1991). Thus, under the law that the PTO applies during biotechnology patent examinations, it is impossible to write a valid claim for "a DNA sequence encoding protein X" unless the specification to the patent discloses that the sequence AGGTTAAATCAC etc. encodes protein X. Therein lies the rub. Because there are sixty-four combinations of three nucleotides (recall that three nucleotides encode one amino acid) and only twenty amino acids, several different combinations of nucleotides are known to encode for the same

<sup>&</sup>lt;sup>6</sup>For additional background, see K. Drlica, Understanding DNA and Gene Cloning: A Guide for the Curious 27-37 (2d ed. 1992).

amino acid. For example, nucleotides AGG and CGA both code for the same amino acid. Thus, two very different strands of DNA can encode the same amino acid sequence:

AGG	TTA	AAT	CAC	ACT	GAA	Nucleotides
-	-	-	4	7	-	
Arg	Leu	Asn	His	Thr	Glu	Amino Acids
1	1	1	-	_	_	
CGA	СП	AAC	CAT	ACC	GAG	Equivalent Nucleotides

So, too, for proteins: certain individual amino acids are interchangeable without effect on some functions of a protein. See Takenaka, supra.

Without a doctrine of equivalents, a gene patent would be valueless unless it claimed every equivalent sequence of nucleotides — competitors could infringe at will simply by substituting nucleotides with others known to be interchangeable. The mathematics alone, however, make describing every possible variant impractical. See In re Bell, 991 F.2d 781, 784 (Fed. Cir. 1993) (noting that 10<sup>36</sup> nucleotide sequences encode a protein called IGF). While no doubt a computer could be programmed to print out every analog, the resulting patent claims would be a stack of paper many miles high, and would overwhelm the PTO, as well as those who track patents, with their sheer bulk.<sup>7</sup>

Protein patents present a similar problem. As the Federal Circuit noted in analyzing a patent claim to the protein erythropoietin, "over 3,600 different [protein] analogs can be made by substituting at only a single amino acid position, and over a million different analogs can be made by substi-

tuting three amino acids." Amgen, 927 F.2d at 1213. Many analogs are functionally indistinguishable, and no purpose would be served by requiring their disclosure.

Biotechnology also needs a doctrine of equivalents to allay unpredictability in application of the law concerning the breadth of claims allowable under section 112. An applicant who isolates a particular protein may, for example, claim that protein. In addition, he or she may identify particularly useful protein fragments, and claim those as well. The patentee may then attempt to claim all similar protein fragments generally. Whether the PTO or courts will allow such a claim depends on an eight-factor test, described by the Federal Circuit in *In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). The factors include:

(1) the quantity of experimentation necessary [to make the claimed invention], (2) the amount of direction or guidance presented [in the specification], (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Id. at 737. Stating the test emphasizes the difficulty an inventor faces at the time of application in predicting whether the claims will be allowed based on the patent's specification. See Amgen, 927 F.2d at 1212-14. As a result, section 112 alone, without any prior art, can severely limit claims.

Without a doctrine of equivalents to temper this unpredictability, decisions in the PTO based on the Wands test could cut off legitimate rights to claim an invention and its substantial equivalents. An inventor's only protection against these losses would be to make and test each potentially useful variant and to describe each in his specification. The extra work would slow down patent applications and would

<sup>&</sup>lt;sup>7</sup>The difficulties of examining DNA and protein patents have already forced the PTO to adopt special rules in this area. 37 C.F.R. §§ 1.821 et seq. (1995); U.S. Department of Commerce, Patent & Trademark Office, Manual of Patent Examining Procedure §§ 2420 et seq. (rev. ed. Sept. 1995).

divert the industry's resources from developing the best commercial embodiments of its inventions.

# E. Equivalents Must Include Later-Discovered Equivalents.

The special problems in biotechnology highlight the need for a doctrine of equivalents that includes equivalents discovered after a patent is filed. The example described in the appendix to this brief illustrates this point. Genentech obtained a patent for t-PA, which is made up of four hundred thirty-nine amino acids. One of Genentech's competitors later discovered that substituting the amino acid methionine for the amino acid valine as the protein's two hundred and forty-fifth amino acid created a protein with functionally identical biological properties. Without a doctrine of equivalents, the value of Genentech's patent would have been lost, even though the substitution of methionine for valine creates a molecule which is, for all known relevant biological purposes, the "same" protein.

Later-discovered improvements also should not preclude a finding of infringement by equivalents. Additional research on t-PA could show, for example, that all but the last fifty of the molecule's four hundred thirty-nine amino acids make up the part of the molecule with therapeutic uses, and that cutting off the last fifty amino acids lowers the molecule's cost of manufacture by making the molecule more soluble. That discovery may itself be patentable. See Tilghman v. Proctor, 102 U.S. 707, 724-25 (1880). Nevertheless, one using t-PA without its last fifty amino acids is still using t-PA and still exploiting the basic discovery of t-PA.

Later-discovered equivalents and improvements in biotechnology are most likely for pioneer patents, which open up new avenues of research. Loss of the doctrine of equivalents in such cases would lead to the ironic result that pioneer patents would receive less protection than merely incremental inventions, instead of the full protection to which they are entitled. See Brothers v. United States, 250 U.S. 88, 89 (1919) (noting that pioneer patents are "entitled... to a liberal application of the doctrine of equivalents"); Continental Paper Bag, 210 U.S. at 415.

A doctrine of equivalents that established a per se rule based on distinctions between noninfringing improvements and infringing equivalent alterations would unfairly eliminate patentees' property rights. It would also be arbitrary. The distinction between these concepts inevitably turns on facts unique to each case. Compare Miles Labs., 997 F.2d at 877 with Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558, 1571 (Fed. Cir. 1986). Any attempt by this Court to fashion a rigid rule based on an improvement/alteration distinction would only exacerbate the uncertainty already inherent in infringement analysis.

## F. Absolute Certainty in Claim Interpretation Is an Unattainable Goal.

Petitioner and several Amici argue that by eliminating the doctrine of equivalents this Court would return certainty to questions of infringement. They also suggest that the doctrine of equivalents is unnecessary, or can be drastically limited, because patentees could protect themselves against too narrow literal infringement findings simply by claiming their inventions with more care.

These arguments imply that there is little or no uncertainty in a literal infringement analysis. This is demonstrably wrong. The inherent limits in the ability of language to describe inventions create an inevitable amount of uncertainty at the borders of patent claims, whether the infringement asserted is literal or equivalent. In *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575 (Fed. Cir. 1996), the patent-at-issue claimed a method for reducing iodide contamination in an organic medium. The method requires a

"stable" resin. Id. at 1578. The specification of the patent defined "stable" to mean "that the resin will not chemically decompose, or change more than about 50 percent of its dry physical dimension upon being exposed to the organic medium..." Id. at 1578-79.

Despite the detail in this definition, Hoechst and BP, both sophisticated parties, hotly disputed the literal meaning of "stable." The particulars of the dispute are unimportant to this discussion. What matters is that these two large chemical companies, and their patent counsel, each felt that a literal reading of "stable" led to a literal infringement finding in its favor.

Disputes such as these are inevitable, especially when words in a document are used to describe new technology.

An invention exists most importantly as a tangible structure or a series of drawings. A verbal portrayal is usually an afterthought written to satisfy the requirements of patent law. This conversion of machine to words allows for unintended gaps which cannot be satisfactorily filled. Often the invention is novel and words do not exist to describe it.

Autogiro Co. of Am. v. United States, 384 F.2d 391, 396-97 (Ct. Cl. 1967). Loss of the doctrine of equivalents would give patent attorneys added incentive to blur the borders of their claims with broadening terms and imprecise adjectives. Infringement evaluations would become more uncertain, not less.

II. DETERMINATION OF INFRINGEMENT UNDER THE DOCTRINE OF EQUIVALENTS IS A QUES-TION OF FACT, BASED ON OBJECTIVE CRITE-RIA, THAT MUST BE TRIED TO THE JURY.

#### A. Infringement Is a Question for the Jury.

Determination of infringement by equivalents is a question of fact, historically left to juries. Some have argued that the application of the doctrine of equivalents is an equitable "remedy," granted by the court under certain circumstances, or a matter of claim construction, also for the court. Those arguments, based on a misconception of the doctrine, are incorrect.

The doctrine of equivalents recognizes that, in patent law, "if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." Graver Tank, 339 U.S. at 608 (quoting Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)); see also Sanitary Refrigerator, 280 U.S. at 41-42 ("There is a substantial identity, constituting infringement," where a device copies a claimed device, without variations or with such variations "as are consistent with its being in substance the same thing.") (quoting Burr v. Duryee, 68 U.S (1 Wall.) 531, 573 (1863)). Therefore, a device or product which does not literally infringe a claim may be an infringement nonetheless, because a claim "functions to forbid not only exact copies of an invention, but products that go to 'the heart of the invention but avoid the literal language of the claim by making a noncritical change." Markman, 64 U.S.L.W. at 4264 (quoting Schwartz, supra, at 82).

A cause of action of infringement by equivalents is not an equitable remedy, nor any sort of "remedy" at all. Nor is it, as some have argued, analogous to contract reformation. Application of the doctrine does not require a search for

errors made in drafting the claim, so that the claim can be reformed. Instead, it allows for the inherent limitations of language by recognizing that "the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself..." Machine Co., 97 U.S. at 125. No matter how carefully drafted, words can never describe a claim so completely and precisely that it encompasses all possible variations. Therefore, it is fair and just to provide protection not only to the exact language of the claim, but also to its substantial equivalents. That is the only sense in which the doctrine of equivalents is equitable.

Arguments made by Petitioner and Amici suggest that the doctrine of equivalents requires two different constructions of the claim. Such arguments are wrong. Application of the doctrine of equivalents arises after the court construes the claim, during the comparison of the claim as construed with the accused device or process. Consideration of that evidence is part of the factual determination of whether or not infringement occurred. If the evidence shows that the accused device is identical to a device literally described by the claim, literal infringement is established, and the comparison is finished. If the accused device is not identical, the fact-finder considers the evidence to determine the substantiality of the differences between the accused device and one that would be literally infringing. If the differences are insubstantial, infringement by equivalents is established. Both of these determinations are questions of fact.

This Court has held consistently for nearly one hundred and fifty years that determination of infringement by equivalents is a factual question for the jury. See Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1868); Winans, 56 U.S. at 344. Less than a month ago, this Court explained again that issues of product identification, that is, "questions of identity and diversity of inventions," are properly

reserved for the jury, Markman, 64 U.S.L.W. at 4268 (quoting Bischoff v. Wethered, 76 U.S. (9 Wall.) 812, 816 (1870)). Allowing the court to make an "initial" determination that the diversity between the claim and the accused product or process is insubstantial, as has been suggested,8 would completely usurp the role of the jury. Once the judge has considered the evidence and decided as a matter of fact that the differences are insubstantial, nothing is left for the jury to do. Just as it would be improper (as it was in Bischoff) for the court to compare the claim and the accused device or process to determine whether as a matter of fact there are any differences, it would be improper for the court to compare them to determine whether as a matter of fact any differences are insubstantial. That sort of dispositive role for the court is precisely what this Court warned in Markman "would improperly eliminate the jury's function in answering the ultimate question of infringement."9 Markman, 64 U.S.L.W. at 4267.

Some of those who argue for the elimination of the jury seem to be motivated by a belief that patent infringement cases are too complicated for juries. That is not a new complaint. One hundred twenty-four years ago, in *Tucker v. Spalding*, 80 U.S. (13 Wall.) 453 (1872), this Court held

<sup>&</sup>quot;This proposition was made in one of the dissenting opinions in the lower court, which recognized that the assessment made by the judge would overlap "in considerable degree" with the analysis to be applied by the jury. Hilton Davis Chem. Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1544 (Fed. Cir. 1995) (Plager, J., dissenting).

<sup>&</sup>lt;sup>9</sup>Affirming that the judge must not make the factual determinations about the substantiality of differences does not mean that every case where infringement by equivalents is alleged will get to the jury. To the contrary, as the Federal Circuit clearly has established, the patentee must offer admissible objective evidence of infringement. See, e.g., Hilton Davis, 62 F.3d at 1519. If the evidence is lacking, such that a reasonable jury could not find infringement by equivalents, summary judgment is appropriate.

"[w]hatever may be our personal opinions of the fitness of the jury as a tribunal to determine the diversity or identity in principle of two mechanical instruments, it cannot be questioned that . . . that question must be submitted to the jury, if there is so much resemblance as raises the question at all." Id. at 455. Patent cases may be complicated. Other types of cases are complicated, too, but we do not take them from the jury for that reason. The solution to complexity is not to eliminate the jury, but to present the evidence in such a way that the jury can understand it.

#### B. The Existence of Infringement by Equivalents Should Be Based on Objective Criteria.

Those who would misconstrue the doctrine of equivalents as an equitable remedy would have courts condition the applicability of the doctrine on subjective criteria such as the good behavior of the patentee or the ill intent of the alleged infringer. That argument is inconsistent with the strict liability aspect of patent law, which does not make liability for infringement dependent on intent to infringe. 35 U.S.C. § 271(a). The law places the responsibility to determine if an existing patent is being infringed on those who are developing devices or products in a particular field. Patents are publicly available so that anyone can determine if a particular device or process has been patented. Liability for infringement is avoided by taking care to avoid it, not by ignoring the possibility of infringement. Liability should not change just because a particular "innocent" infringer was fortunate enough inadvertently to avoid literal infringement by having made insubstantial changes. Such a result would be inconsistent with the policy of providing uniform protection for patents.

The argument that only deliberate copiers should be liable for infringement by equivalents is also contrary to the purpose of the doctrine itself. The doctrine protects "the heart of the invention" from infringement through insubstantial changes. It guards against infringement by one who is either clever or lucky enough to include an element that uses the patented idea but avoids the exact words of the claim. The doctrine is concerned with protecting the property rights of the patentee, not with punishing infringers. The protection given through application of the doctrine would be severely diminished if it were applied only to those who intentionally infringed.

Evidence of deliberate copying versus independent development is not irrelevant to infringement by equivalents. Evidence that an alleged infringer studied the patent and then made only the changes necessary to avoid the literal scope of the patent could allow the fact-finder to draw an inference that the differences are insubstantial. Evidence that the alleged infringer undertook significant independent research and development could allow the contrary inference. Neither type of evidence would be conclusive, however, as under the rules established by the expert judges of the Federal Circuit, the determination of infringement by equivalents depends on the objective differences between the claim and the accused device or process. Hilton Davis, 62 F.3d at 1519.

<sup>&</sup>lt;sup>10</sup>Punishment of infringers is found elsewhere in patent law. Under 35 U.S.C. sections 284 and 285, the court may award a patentee enhanced damages and attorney fees if the infringer is shown to have acted in bad faith. Those sections do not distinguish between literal and equivalent infringers, but apply to both.

The Court's reference in *Graver Tank* to an "unscrupulous copyist" was not a restriction on the application of the doctrine, but only a recognition that the need for application of the doctrine is particularly apparent where such infringers appear. *Graver Tank*, 339 U.S. at 607, 612.

III. AS MOST APPLICATIONS ARE AMENDED, ADOPTING PETITIONER'S POSITION ON PROSECUTION HISTORY ESTOPPEL WOULD RESULT IN A DE FACTO ELIMINATION OF THE DOCTRINE OF EQUIVALENTS.

Prosecution history estoppel is a well-established limitation on the scope of permissible equivalents to a patent claim. In applying principles of prosecution history estoppel established by this Court, the Federal Circuit, which reviews dozens of prosecution histories each year, has established an appropriate balance between the property interests of the patentee and the reliance interests of accused infringers.<sup>12</sup> This case presents no reason to rewrite this law.

Petitioner essentially asks this Court to expand the application of prosecution history estoppel to preclude a patentee's resort to the doctrine of equivalents whenever claims are amended during prosecution. Although Petitioner couches its argument in terms of "deliberate surrenders," as a practical matter, any narrowing amendment could be characterized in later litigation as a surrender. Were the Court to adopt Petitioner's "surrender" approach to prosecution history estoppel, any patentee who amended his claims would be unable to rely on the doctrine of equivalents. Since most patent applications are amended after filing, General Accounting Office, supra, at 17, Petitioner is, in fact, seeking a de facto elimination of the doctrine of equivalents. This result is not compelled either by this Court's precedents or by the policies behind prosecution history estoppel.

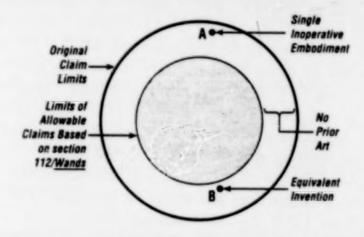
This Court's precedents have made clear that when, as in Hilton Davis, a patent applicant surrenders subject matter during patent examination to overcome an objection based on prior art, the patentee cannot use the doctrine of equivalents to recapture subject matter that was not patentable in the first instance. Exhibit Supply Co. v. Ace Patents Corp., 315 U.S. 126, 136 (1942) (prosecution history estoppel applies when an applicant alters his claims "in order to meet objections in the Patent Office, based on references to the prior art"); Smith v. Magic City Kennel Club, Inc., 282 U.S. 784, 789 (1931) ("where an applicant for a patent to cover a new combination is compelled by the rejection of his application by the Patent Office to narrow his claim by the introduction of a new element, he cannot after the issue of the patent broaden his claim by dropping the element"); I.T.S. Rubber Co. v. Essex Rubber Co., 272 U.S. 429, 443 (1926) (same). A more expansive view of the doctrine is not warranted.

As the Federal Circuit has noted, "in the course of patent examination claims are often amended and rewritten and added and subtracted." Pall Corp. v. Micron Separations, Inc., 66 F.3d 1211, 1219 (Fed. Cir. 1995). "No reason or warrant exists for limiting application of the doctrine of equivalents to those comparatively few claims allowed exactly as originally filed and never amended." Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1363 (Fed. Cir. 1983). Application of the Wands test, for example, often results in limiting amendments. For this reason, "[a] nonsubstantive change or a change that did not in fact determine patentability does not create an estoppel." Pall Corp., 66 F.3d at 1219; see also Musher Found., Inc. v. Alba Trading Co., 150 F.2d 885, 888 (2d Cir.) (L. Hand, J.) (when a patentee's amendment is not to overcome prior art "it becomes an open question which must be proved, whether he intends to surrender the disclosure in such sense

<sup>&</sup>lt;sup>12</sup>See Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 952 (Fed. Cir. 1993) (measuring estoppel "from the vantage point of what a competitor was reasonably entitled to conclude, from the prosecution history, that the applicant gave up to procure issuance of the patent"); see also Haynes Int'l. Inc. v. Jessop Steel Co., 8 F.3d 1573, 1578 (Fed. Cir. 1993), on reh'g, 15 F.3d 1076 (Fed. Cir. 1994) (same).

that he abandons any equivalents of the elements of those claims which he keeps"), cert. denied, 326 U.S. 770 (1945).

Petitioner's position on prosecution history estoppel ignores its purpose, and would apply prosecution history estoppel in even those cases in which an amendment was not required to overcome prior art. Graver Tank itself suggests circumstances in which this could occur. The patent-atissue in Graver Tank originally contained broad claims that read literally on the defendant's infringing process as well as narrow claims that did not. Graver Tank, 339 U.S. at 616 (Black, J., dissenting). The broad claims were found unpatentable because they covered inoperable embodiments. See Graver Tank & Mfg. Co. v. Linde Air Prods. Co., 336 U.S. 271, 276-77 (1949). Nevertheless, in finding infringement of the narrow claims under the doctrine of equivalents, the majority of this Court acknowledged a zone of patent coverage that was broader than the literal language of the claims, but which was not unpatentable over the prior art, and could therefore be infringed. The same situation could arise through an amendment during patent prosecution.



As this diagram illustrates, a patentee may be forced to limit his claims under the enablement requirement of section 112 to only a portion of the full scope of his invention. This could occur, as in *Graver Tank*, if the original claims

contained inoperative embodiments. If the next broadest claim the applicant files consistent with the requirements of section 112 is substantially narrower than the original claim, the claims will be limited to a narrow scope, even though a broader invention scope is allowable over the prior art. Petitioner would have this Court adopt a rule allowing anyone to commercialize "B" without any liability to the patentee, depriving the patentee of the benefits of his invention and chilling patent law's incentives for research.

Petitioner's prosecution history estoppel position creates odd justice. An applicant who filed narrow claims, and received no rejections, would be entitled to the full range of equivalents. An applicant who submitted broad claims, and narrowed them during examination, would get no protection against equivalents, even though the narrower claims are the same as would have been allowed in the first instance.

Rigid application of prosecution history estoppel would also flood the courts with PTO appeals. Applicants, reluctant to risk the estoppel effect of narrowing amendments, would have newfound incentive to litigate examiner's decisions. The result would be increased administrative expense for the entire patent system, from the examiners through the Board of Patent Appeals and into the courts. Patent attorneys well understand the application of prosecution history estoppel, which this Court and the Federal Circuit have clearly described. No new rules are needed.

<sup>&</sup>lt;sup>13</sup>A patentee is not free to amend claims in any manner he or she desires. Section 112 requires support in the application as filed for each claim limitation. For example, if a patentee has claimed a process with a temperature range from 25° to 75°, the patentee may not limit that claim to a range of 30° to 60° unless the application as filed also disclosed the latter specific range. Merely being within the originally disclosed range is not sufficient to satisfy section 112. See 2 Chisum, supra, at § 7.04[2].

#### CONCLUSION

The doctrine of equivalents plays an important role in patent law, and is particularly crucial for the biotechnology industry. The loss or limitation of the doctrine would harm the industry without adding any certainty to claim interpretation. The decision of the court below should be affirmed.

Respectfully submitted,

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#### APPENDIX

New Policy in Interpreting Japanese Patents: Osaka High Court Affirming Infringement of Genentech's t-PA Patents under the Doctrine of Equivalents

#### Toshiko Takenaka\*

On March 29, 1996, Osaka High Court reversed Osaka District Court's decision and found that Sumitomo's t-PA infringes Genentech's pioneer patents for human t-PA under the doctrine of equivalents. Since this case may change Japanese case law on patent claim interpretation 180 degrees to merge with German and U.S. case law, I have included a summary of the case as well as my comments in comparative law aspects.

Decision of Osaka High Court (Osaka Koto Saibansho) March 29, 1996-Case No. Heisei 6 (ne) 3292

#### Background

The plaintiff-appellant, who owns two patents for a human tissue plasminogen activator (t-PA), sued the defendant, who was preparing to manufacture and sell a human tissue plasminogen activator, in order to prevent defendant

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from engaging such manufacture and sale. Claims of Patent A issued to the plaintiff read:

- 1. A recombinant human tissue plasminogen activator resulting from a non-human host cell, having no other human protein, which activator is characterized by
  - (1) a function to convert plasminogen to plasmin;
  - (2) an ability to provide an affinity for fibrin;
  - (3) an ability to immunoprecipitate with antibody against human tissue plasminogen activator originating from Bowes melanoma cell line;
  - (4) an amino acid sequence providing a kringle region and serine protease region; and
- (5) either single or multiple amino acid; and comprises a segment of 89th to 527th amino acid as indicated in the appendix 1.
- 2. A method for manufacturing a recombinant human tissue plasminogen activator having no other human protein, comprising steps of culturing non-human host cell transformed with a DNA sequence encodinghuman tissue plasminogen under conditions to enable said host cell to express said DNA; whereby providing a recombinant human tissue plasminogen activator characterized by
  - (1) a function to convert plasminogen to plasmin;
  - (2) an ability to provide an affinity for fibrin;
  - an ability to immunoprecipitate with antibody against human tissue plasminogen activator originating from Bowes melanoma cell line;
  - (4) an amino acid sequence providing a kringle region and serine protease region; and
  - (5) either single or multiple amino acid; and

comprises a segment of 89th to 527th amino acid as indicated in the appendix 1; and recovering said recombinant human tissue plasminogen activator.

- 3. A medicine for the treatment of thrombosis comprising an amount of recombinant human tissue plasminogen activator resulting from a non-human host cell, having no other human protein, which amount is sufficient for such treatment and mixed with a carrier permissible as a medicine, which activator is characterized by
  - (1) a function to convert plasminogen to plasmin;
  - (2) an ability to provide an affinity for fibrin;
  - (3) an ability to immunoprecipitate with antibody against human tissue plasminogen activator originating from Bowes melanoma cell line;
  - (4) an amino acid sequence providing a kringle region and serine protease region; and
- (5) either single or multiple amino acid; and comprises a segment of 89th to 527th amino acid indicated in the attached appendix 1.

The only claim of Patent B read:

A microorganism, yeast, and mammal cell transformed by a recombinant expression vector containing a DNA sequence encoding human tissue plasminogen activator, having a sequence of 1st to 527th amino acids listed in the attached appendix 1.

The defendant requested a trial of nullity on both patents but the request was rejected by the Japanese Patent Office. Plaintiff sued another Japanese pharmaceutical company for infringement of the same patents. The Osaka District Court found for plaintiff because that company's t-PA included a sequence of amino acids as they are listed in the claims although the sequence also included some insignificant

amino acids. In contrast, the same court found no infringement for this case since one amino acid was different from the claimed sequence. The court rejected to look at sources other than the claims, stating that it is not necessary to make reference to other sources when the invention is clear from the claim language. Since one amino acid is missing from defendant's t-PA, the court did not find literal infringement. It also rejected plaintiff's request to apply the doctrine of equivalents, emphasizing on the third parties' interests, relying on the claims. The plaintiff appealed, arguing that the defendant's product was substantially the same or equivalent to the patented invention.

In determining equivalency, the parties' arguments focused on the obviousness of replacing valine with methionine, because the replacement is the only structural difference between the patented inventions and the defendant's product. The plaintiff emphasized that the patented inventions are pioneer inventions. To establish non-equivalency, the defendant argued that its t-PA was developed independently from the patented inventions.

#### Opinion

The contested decision is set aside and the defendantappellee is sustained from engaging in infringing activities. The plaintiff-appellant's appeal is admissible.

#### I. Infringement by Equivalents

As arguments by the parties indicate, it is not automatically clear whether the invention including met-t-PA is substantially the same as the invention including val-t-PA. Since an invention is defined as a highly advanced creation of technical idea using a law of nature, courts must put weight on experts' (those skilled in the art) opinions and views in deciding whether an accused embodiment falls within the technical scope provided in Article 70. Unless the

experts can understand the technical scope of the patented invention with no uncertainty on the basis of the claim, claim language is not the only resort for determining the technical scope of a patented invention. Although an invention, which is the subject matter of a patent, i.e., an industrial property right, is described in a claim, the content described in claims is simply the gist of the invention. Since an invention is intangible, its structure must be described in terms of words. It should be noted that although Article 70 provides a means with which to decide the technical scope of the invention on basis of claim language, but does not limit the scope to only cover the literal scope of the claim. Because it is impossible to fully describe the structure of an intangible subject in terms of words, Article 70 provides courts with the flexibility to decide the scope in granting an injunction based on a patent, on the basis of the claim language. The question of whether an accused embodiment falls within the technical scope of a patented invention is a step to define the outermost boundary of the technical scope and is solved by the court which decides infringement.

If an accused embodiment corresponds to the claimed invention and thus is clearly found by one skilled in the art to fall within the technical scope, patent law requires a method for determining the technical scope of a patented invention. This enables courts to find such embodiment being equivalent to the patented invention, even if the embodiment neither literally infringes the claim, nor meets every element of the claim.

In affirming infringement by an embodiment which is not literally the same as the structure of patented invention, courts must pay attention to third parties' interests which rely on the technical scope based on the claim language in balance with the patentee's interest. It is necessary to establish a standard to balance both interests. In scholarly opinions, two elements of interchangeability and obvi-

ousness of interchangeability are proposed as requirements to find equivalency to establish such a standard. Therefore, the parties' dispute in this case centers on whether the accused product meets the two elements. These two elements are positive requirements to affirm equivalency. On the other hand, there are other elements in particular cases, such as some facts in patent prosecution which may prevent courts from finding equivalency. In determining whether the defendant's t-PA including met-t-PA is equivalent to Patented Invention A or B including val-t-PA, courts must affirm equivalency by examining every positive and negative element, while confirming that finding of equivalency would not upset the balance between interests of third parties, who rely on the description of the claims, and those of patentees.

#### II. Evaluation With Respect To Positive Elements for Equivalents

#### 1. Interchangeability

It is not disputed that all amino acid sequence in patented t-PA and defendants' t-PA are exactly the same, except that the 245th amino acid in Patented Inventions A and B is valine, whereas the corresponding acid in the defendants t-PA is methionine. The defendant also does not dispute that its t-PA has the characteristics cited in the claims of Patents A and B. Accordingly, the defendant's t-PA provides the same function as the patented t-PA, and thus satisfies the interchangeability element.

#### 2. Obviousness of Interchangeability

(Courts listed 11 expert opinions obtained from distinguished professors in molecular biology.)

#### **Expert Opinions**

In summary, the experts' opinions on whether one skilled in the art would have readily obtained the defendant's thrombolytic agents by replacing valine with methionine is as follows:

- (1) Valine and methionine behave similarly in structuring three dimensional protein structure.
- (2) Transformation from valine to methionine in protein amino acid sequences occurs relatively frequently. This transformation does not affect the function of the protein (trivial transformation).
- (3) t-PA's 245th position is buried in the hydrophobic region of the three dimensional structure of the protein and has no significant role in relation to biological activity.
- (4) If a sequence of amino acids is identified, one skilled in the art could have manufactured a t-PA variation wherein some amino acid residues are replaced, deleted or added by manufacturing t-PA's cDNA and changing a segment of the canonical amino acid sequence in the t-PA.
- (5) The significance of Patented Inventions A and B is to express a t-PA cDNA encoding a recombinant t-PA which provides a biological activity.
- (6) In scientists' view, the significance of the first successful cloning of a t-PA c-DNA and producing a recombinant t-PA is vastly greater than subsequently repeating the cloning of t-PA by making reference to the disclosure of the first cloning procedure.
- (7) Production of a different form of t-PA by making reference to amino acid sequence of t-PA has no practical use, unless the different form of t-PA provides improved characteristics.

(8) Cloning errors occur very frequently. In most cases, such errors result from replacements of insignificant amino acid residues with similar amino acid residues which do not affect the function of the protein. When a protein resulting from a cloning error has the same function as that of the original protein, the error results from a replacement of insignificant amino acids with similar amino acids. Therefore, one skilled in the art could have known that the protein in a different form resulting from the error would have the same function as the original protein.

### Technical Objective of Patented Inventions A and B

On the priority date of Patented Inventions A and B, natural t-PA was only produced by isolating from human cells, and the quantity produced by this isolation was very small. Although production of useful proteins through recombinant DNA technology was about to become a reality, the production of t-PA through recombinant DNA technology was very difficult, because an only very small quantity of natural t-PA is available, the concentration of t-PA mRNA is extremely low; and t-PA mRNA consists of a very long sequence. Based on the state of art as discussed, the objective of Inventions A and B is to produce a sufficient quantity of t-PA through a recombinant DNA and to develop t-PA thrombolytic agents. Inventions A and B achieved the objective by determining the sequence of a full-length t-PA clone, which is essential to produce t-PA through recombinant DNA technology. This results in information disclosure which enables one skilled in the art to produce a sufficient quantity of t-PA which is capable of replacing natural t-PA, a sufficient quantity of t-PA to conduct animal and clinical experiments for governmental approvals to commercialize t-PA as medicine.

#### Significance of Inventions

With respect to the objective, the significance of Inventions A and B relies on a form of t-PA, i.e., an invention of a product, obtained through a recombinant DNA technology. The list of amino acids in the claims indicates that the invention identified t-PA and discovered all amino acids in t-PA. The t-PA claimed as Inventions A and B is defined as a t-PA obtained through a recombinant DNA technology.

The disclosure of Inventions A and B enabled one skilled in the art to understand the manufacturing method of t-PA with the disclosed characteristics through a recombinant DNA technology. One skilled with his or her general knowledge in the art would have been able to produce a sufficient quantity of t-PA, which was not possible by conventional methods.

As the findings from the expert opinions indicate, if the amino acid sequence of t-PA is identified, t-PA in various forms could be produced. This is also discussed in the specification. These findings support the view that one skilled in the art, with the general knowledge available on the priority date of Inventions A and B, could have readily made t-PA in various forms by replacing a portion of the amino acid sequence recited in the claims, so as to obtain a form of t-PA with improved characteristics. In the Scientists' view, unless a t-PA in a different form reveals characteristics superior to that of the original t-PA, the modified t-PA does not have any practical significance above that of the original t-PA.

Because the 245th position is not in a significant region, the replacement of valine with methionine does not affect the function of the protein, and a t-PA in a different form would have been readily made; it was highly possible or expected on the priority date, for one skilled in the art, to replace valine in the 245th position with methionine in the

t-PA protein so as to obtain a T-PA in a different form with a function comparable to that of the original T-PA. The defendant's witness's statement that the defendant's T-PA resulted from a cloning error also supported that it was well expected for one skilled in the art to obtain a t-PA in a different form resulting from a cloning error.

(The court rejected defendant's arguments that a replacement of valine with methionine would change the characteristics of the protein, relying on the expert opinions that the characteristics of defendant's t-PAs are indistinguishable from those of the patented t-PA.)

## III. Negative Element: Prosecution History

## 1. Prosecution History of Patented Inventions A and B

The original application for Invention A included 16 claims, including a claim which reads: "a DNA human tissue plasminogen activator, having substantially no other human protein." During the examination of the opposition against the application, the JPO examiner upheld the opposition and rejected on the basis of lack of enablement. The examiner agreed with the opponent that the claim was too broad compared with the disclosure. The published claims covered any t-PA having characteristics cited in the claims, which are comparable to the characteristics of natural t-PA. The application, however, did not include any disclosure on variations where amino acid residues in positions 69 through 527 were replaced. Since the characteristics of t-PA in a different form were unknown, the claim scope including these unknown variations was not permitted. In the trial against the decision of refusal, the plaintiff gave up and limited the claims to include a list of amino acids in positions 69 to 527.

Similarly, the original application of Invention B did not include a list of amino acids, and was rejected for lack of enablement, on the ground that the claims were too broad

compared with the disclosure in the specification. To overcome this rejection, the plaintiff introduced the list of amino acids in positions 1 to 527 positions. In its argument accompanying the amendment, the plaintiff emphasized that the introduction of the limitation on the specific sequence of amino acids should not be interpreted to exclude t-PA in different forms, which would be obvious to one skilled in the art from the amino acid sequence cited in the amended claims. This amendment did not satisfy the JPO examiner. The defendant again amended the claim and deleted the words "allelic variations" and "derivatives," these words were pointed out by the examiner as being not fully supported by the disclosure in the application.

Although the claims were amended to recite only the particular amino acid sequence, the specification of Patent Invention A described possible variation resulting from single or multiple amino acid substitutions, deletions, additions or replacements, and made clear that the scope of this invention comprised these variations, as long as they maintained the characteristics of human tissue plasminogen activator. The specification of Patent B also maintained a description that the term "a DNA sequence encoding human tissue plasminogen activator" included all DNA encoding all allelic variations and modifications resulting in derivatives of human tissue plasminogen activator.

These facts in the patent prosecution indicate that the limitation of amino acid sequence was introduced to meet the requirement provided in Article 36, because variations included in the original claims were not supported by the disclosure in the specification. When a claim is amended to overcome the rejection for lack of novelty or inventive step, the invention is not patentable if its scope is interpreted beyond the literal claim scope. Thus, the interpretation is not permissible. In comparison, when a claim is amended to clarify the description of an invention, the interpretation

beyond the literal claim scope would not result in lack of novelty or inventive step and thus should be permissible. Communications from the examiner do not indicate that all variations were excluded from the technical scope of patented t-PA. Thus, no fact in the patent prosecution history gives rise to an element to prevent the court from finding equivalency. No plaintiff's argument gives rise to the application of estoppel.

## IV. Argument of Independent Development

A product or method infringes a patent as long as it falls within the technical scope of the patented invention regardless of its independent development from the patented invention. Evidence of the defendant's copying of the patented invention is indirectly relevant to suggest that the interchangeability and obviousness of interchangeability elements are met in affirming equivalency. An argument of independent development is relevant to refute the plaintiff's contention that the accused product meets the two elements of interchangeability and obviousness of the interchangeability, because the defendant copied the patented invention. Because a finding of infringement does not rest on the subjective awareness of the defendant, argument of independent development is not directly relevant to establish nonequivalency by the defendant.

In this case, the plaintiff did not introduce the evidence of the defendant's copying of the patented t-PA. Thus, the defendant's argument was not relevant in determining equivalency.

(Despite the irrelevancy of the evidence on independent development, the court examined evidence on the defendant's process of developing its t-PA and rejected the argument that the defendant independently developed the t-PA.)

## V. Conclusion

In summary, no fact which prevents a finding of equivalency was found, and a finding of equivalency between the patented inventions and defendant's t-PA does not upset third parties' reliance on the patent claims. Accordingly, the defendant's t-PA is equivalent to the patented t-PA. The defendant's t-PA, its manufacturing method and thrombolytic agents fall within the technical scope of the patented invention.

It is established that the defendant is preparing to culture the accused cell and manufacture and sell the accused thrombolytic agents by using the accused method. Since these activities constitute infringement of the plaintiff's patents, the plaintiff's request to enjoin the activities, and destroy the accused products, is lawful.

## Comments

This case is very important not only because it may completely change case law direction on Japanese claim interpretation, but also because it involves pioneer inventions owned by U.S. biotech company, the significance of the invention is great not only to that company but also to U.S. industry. The Osaka District Court's denial of finding infringement almost resulted in trade disputes between U.S. and Japanese government. Interestingly, infringement suit was also brought against the defendant's licensor in the United States on the basis of the U.S. patents corresponding to Japanese patents in this case (although U.S. patent claims did not include the limitation of amino acid sequence). In appeal from the trial court's finding of infringement, the defendant of the U.S. case did not appeal on the issue of infringement concerning the form of t-PA disputed

Genentech Inc. v. Welcome Foundation Ltd., 29 F3d 1555 (Fed. Cir. 1994).

in Japanese case. Regarding the U.S. defendant's FE1X protein, a different product from the Japanese defendant's product, Federal Circuit found no infringement.

Japanese patent law has been extensively criticized for its narrow claim interpretation and its reluctance to find infringement under the doctrine of equivalents.2 As typically shown by the first instance decision of this case, when the disputed claim does not literally cover the accused embodiment, Japanese courts find no infringement and reject patentee's request to apply the doctrine of equivalents, giving weight on third parties' interests and legal certainty. When parties dispute a claim term whether the claim includes the accused device, courts find that the claim does not clearly specify the invention, and limits the scope to the scope explicitly or implicitly disclosed in the specification.3 The recent cases, however, indicate a new tendency in Japanese courts which favors the patentee's interests although even in a most progressive case Tokyo High Court carefully avoided using a term "equivalency or equivalents" as the reason to extend the protection beyond the claim literal scope.4 The Osaka High Court's determination to change the case law and affirm the doctrine of equivalents is clear from its discussion of patent law policy. In civil law countries, particularly Japan, courts' opinions do not include an extensive discussion on legal theory and policy since their power is limited to solve disputes involved in a particular case. This court opinion begins with an extensive discussion of needs for extending the protection beyond the literal claim scope because the nature of words makes impossible to fully describe an invention, a technical idea, without any ambiguity. The patent policy discussed by the Osaka High Court closely parallels to the United States Patent Policy to make reference to sources other than claims and find infringement under the doctrine of equivalents.<sup>5</sup>

An important rule that the Osaka High Court emphasized was that patent claims must be interpreted as if one skilled in the art would have read the claim. Claims should be read by making reference to the specification, drawings and general knowledge of one skilled in the art. In other words, the protection scope of Japanese patents includes not only disclosed embodiments but also those obvious to one skilled in the art. From now on, expert testimony may take a significant role in Japanese patent infringement cases dealing with high technology such as biotechnology.

A strong U.S. influence is also shown by the test adopted by Osaka High Court. The court's two-part test, examining (1) whether the amino acid recited in the claims is interchangeable with the amino acid in the defendant's t-PA and (2) whether one skilled in the art would have known or conceived the replacement of such amino acids clearly parallels to the interchangeability and known interchangeability tests in determining an insubstantial difference adopted by Federal Circuit in Hilton Davis Chemical Com-

<sup>&</sup>lt;sup>2</sup>For a general discussion of Japanese patent claim interpretation in comparison with United States and German patent claim interpretation, see Takenaka, *Interpreting Patent Claims: The United States, Germany and Japan* (1996).

<sup>&</sup>lt;sup>3</sup>Fujitsu v. TI, Judgment of Tokyo District Court August 31, 1994, reported in Hanrei Jiho (No. 1510) 35 (1995); Hanrei Taimuzu (No. 862) 108 (1995). (In this case, the Tokyo Trial Court rejected the literal coverage of a pioneer invention for manufacturing integrated circuits including the modifications resulting from the later technological development, stating that no suggestion of the modification is found in the disclosure.)

<sup>&</sup>lt;sup>4</sup>Takenaka, Case Comment "Ball Spline Bearing" 26 IIC 683 (1995).

<sup>&</sup>lt;sup>3</sup>Autogiro Company of America v. the United States, 384 F.2d 391 (Ct. Cl. 1967).

pany Inc. v. Warner-Jenkinson Co.6 Similarly, Osaka High Court's reasoning to reject the defendant's argument of independent development parallels to that of Federal Circuit in Hilton Davis, stating that the argument is relevant only if patentee argued that the accused embodiments are copied to establish the interchangeability and known interchangeability between the claimed invention and accused embodiment for finding equivalency. Finally, the Osaka Court followed Federal Circuit in limiting the application of prosecution history estoppelonly when limitations are introduced to overcome a rejection for lack of novelty and inventive step.7 In short, this t-PA case moved Japanese patent claim interpretation merged with the United States patent claim interpretation. Since Hilton Davis has moved United States patent claim interpretation to German counterpart,8 patent claim interpretation in three major jurisdictions is now in line. Giving the pending disposition before the Supreme Court of Hilton Davis, the test and limitation for the doctrine of equivalents the Osaka High Court is premature in the United States at this time. For the sake of harmonization, I cannot help hoping that the Supreme Court would affirm the substantial difference test adopted in Hilton Davis.

<sup>&</sup>lt;sup>6</sup>Hilton Davis Chemical Company Inc. v. Warner-Jenkinson Co., 62 F.3d 1512, USPQ2d 1641 (Fed. Cir. 1995).

<sup>7</sup>Id., at 1525.

<sup>&</sup>lt;sup>8</sup>Takenaka, Doctrine of Equivalents After Hilton Davis: Comparative Law Analysis, Rutgers Technology and Computer Law Journal (forth-coming 1996 May).



No. 95-728

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CLERK

# OCTOBER TERM, 1995

Warner-Jenkinson Company, Inc.

Petitioner,

HILTON DAVIS CHEMICAL CO.,

Respondent.

ON WRIT OF CERTIORAIN TO THE UNITED STATES
COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF LITTON SYSTEMS, INC., AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

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## QUESTIONS PRESENTED

- (1) Should this Court abandon the traditional rule recognized in Graver Tank & Manufacturing Co. v. Linde Air Prods., 339 U.S. 605 (1950), under which patent infringement may be found whenever the accused product or process is "equivalent" to the invention claimed in the patent, as determined by a jury guided by proper instructions from the court as to function, way, and result?
- (2) If this Court were to abandon or modify Graver Tank and its earlier precedents to the same effect, would it be free to disregard the settled expectations of patent holders who relied on Graver Tank in seeking patents and thereby disclosing their inventions to the public?

## TABLE OF CONTENTS

IN	TTEREST OF AMICUS CURIAE
IN	TRODUCTION AND SUMMARY OF ARGUMENT 1
Al	RGUMENT 5
I.	THE COURT OF APPEALS' VIEW OF THE DOCTRINE OF EQUIVALENTS
	WAS CORRECT 5
	A. The Court of Appeals' Decision Is Correct under Graver Tank
	B. Congress Did Not Displace Graver Tank in the 1952 Patent Act
	C. Under Markman and this Court's 19th-Century Predecents, Application of the Doctrine of Equivalents Must Be Left for the Jury
П.	ANY CHANGE IN THE DOCTRINE OF EQUIVALENTS SHOULD BE MADE PURELY PROSPECTIVE
C	ONCLUSION 30

## TABLE OF AUTHORITIES

Cases: Page	e
Administrators of Calthorp v. Waymans,	
84 Eng. Rep. 966 (K.B. 1676) 8, 18	8
Alden v. Dewey, 1 F. Cas. 329 (C.C.D.Mass. 1840)	
(No. 153)	-
Armstrong v. United States, 364 U.S. 40 (1960) 28-29	9
Aro Mfg. Co. v. Convertible Top Replacement Co.,	
365 U.S. 336 (1961)	5
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750 F.2d 1569 (Fed. Cir. 1984)	100
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3 F. Cas. 653 (C.C.D.Conn. 1846) (No. 1,521)	0
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Foundation, 402 U.S. 313 (1971)	3
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	7
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170 U.S. 537 (1898)	0
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Cantrell v. Wallick, 117 U.S. 689 (1886)	3
Carver v. Hyde, 41 U.S. (16 Pet.) 513 (1842) 20	0
Chisom v. Roemer, 501 U.S. 380 (1991)	5
Cimiotti Unhairing Co. v. American Fur Refining Co.,	
198 U.S. 399 (1905)	
Clough v. Barker, 106 U.S. 166 (1882) 1:	3
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210 U.S. 405 (1908)	3
Coupe v. Royer, 155 U.S. 565 (1895)	5
Daubert v. Merrill Dow Pharmaceuticals, Inc.,	
113 S. Ct. 2786 (1993)	5

Cases (continued)	Page
Davis v. United States, 495 U.S. 472 (1990)	15
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De La Rue v. Dickenson, Goodeve's Pat. Cas. 164 (1857	-
Dolan v. City of Tigard, 114 S. Ct. 2309 (1994)	
Eastman Kodak Co. v. Image Technical Services, Inc.,	
504 U.S. 451 (1992)	17
Feed Serv. Corp. v. Kent Feeds, Inc., 528 F.2d 756 (7th	Cir.),
cert. denied, 429 U.S. 870 (1976)	10
General Elec. Co. v. Wabash Appliance Corp.,	
304 U.S. 364 (1938)	10
Gould v. Rees, 82 U.S. (15 Wall.) 187 (1872)	9, 20
Graver Tank & Manufacturing Co. v. Linde	
Air Prods., 339 U.S. 605 (1950)	. passim
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(No. 5,718)	9
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329 U.S. 1 (1946)	16
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113 S. Ct. 2510 (1993)	29
Harper & Row v. Nation Enterprises, 471 U.S. 539 (198	5) 16
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Heckler v. Community Health Services, 467 U.S. 51 (19)	84) 29
Hill v. Thompson and Forman,	
1 Webs. Pat. Cas. 239 (1818)	18
Hoyt v. Horne, 145 U.S. 302 (1892)	
Huddart v. Grimshaw, 1 Webs. Pat. Cas. 85 (1803)	
Hughes Aircraft Co. v. United States,	
717 F.2d 1351 (Fed. Cir. 1983)	14
Hughes v. Washington, 389 U.S. 290 (1967)	
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Insta-Foam Products, Inc. v. Universal Foam Systems, I	
906 F.2d 698 (Fed. Cir. 1990)	14
Ives v. Hamilton, 92 U.S. (2 Otto) 426 (1875)	9-10
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Kokomo Fence Mach. Co v. Kitselman, 189 U.S. 8 (1903) .	
Laitram Corp. v. NEC Corp.,	
952 F.2d 1357 (Fed. Cir. 1991)	14
Landgraf v. USI Film Prods., 114 S. Ct. 1483 (1994)	30
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(Fed. Cir. 1985)	14
London v. Carson Pirie Scott & Co.,	
946 F.2d 1534 (Fed. Cir. 1991)	7
Lucas v. South Carolina Coastal Council,	
505 U.S. 1003 (1992)	28
Markman v. Westview Instruments, Inc., No. 95-26,	
64 U.S.L.W. 4263 (Apr. 23, 1996) 2-3, 9, 10, 17-18,	21-25
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May v. County of Fond Du Lac, 27 F. 691	
(C.C.E.D.Wis. 1886)	
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(9th Cir. 1982)	14
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(C.C.D.Mass. 1814) (No. 10,432)	9
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Patterson v. McLean Credit Union, 491 U.S. 164 (1989)	17
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Penn Central Transp. Co. v. City of New York,	
438 U.S. 104 (1978)	27
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Cases (continued)	Page
Raley v. Ohio, 360 U.S. 423 (1959)	29
Regional Rail Reorganization Act Cases,	
419 U.S. 102 (1974)	28
Richmond Screw Anchor Co. v. United States,	
275 U.S. 331 (1928)	27-28
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280 U.S. 30 (1929)	4, 9, 13, 14
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Silsby v. Foote, 55 U.S. (14 How.) 218 (1852)	
Smith v. Pearce, 22 F. Cas. 619 (C.C.D.Ohio 1840)	,
(No. 13,089)	20-21
Square D. Co. v. Niagara Frontier Tariff Bureau, Inc.	
476 U.S. 409 (1986)	
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(Fed. Cir. 1985) (en banc)	
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(No. 13,762)	-
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Tidal Oil Co. v. Flanigan, 263 U.S. 444 (1924)	
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97 U.S. 120 (1877)	5, 9, 13, 26
United States v. Dubilier Condenser Corp.,	
289 U.S. 178 (1933)	7

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Valmont Indus., Inc. v. Reinke Mfg. (	Co., 983 F.2d 1039	
(Fed. Cir. 1993)		16
Walton v. Potter & Horsfall, 1 Webs	. Pat. Cas. 585 (184	11) 19
Webb's Fabulous Pharmacies, Inc. v	. Beckwith,	
449 U.S. 155 (1980)		28
Whitney v. Carter, 29 F. Cas. 1070, 1	1078 (C.C.D.Ga. 18	310)
(No. 17,583)		
William Cramp & Sons Ship & Engir	ne Bldg Co. v. Int'l	Curtis
Marine Turbine Co., 246 U.S. 28	(1918)	27
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904 F.2d 677 (Fed. Cir.), cert. de	enied,	
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(1853)	4, 9,	18, 19, 22
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(No. 18,107)		9
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		11
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Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261		11 12 17
Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261 Pub. L. 94-131, 89 Stat. 691		11 12 17 17 , 7, 16, 17
Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261 Pub. L. 94-131, 89 Stat. 691 35 U.S.C. § 112		11 12 17 17 .7, 16, 17
Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261 Pub. L. 94-131, 89 Stat. 691 35 U.S.C. § 112 35 U.S.C. § 154(a)(2)		11 12 17 17 , 7, 16, 17 7
Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261 Pub. L. 94-131, 89 Stat. 691 35 U.S.C. § 112 35 U.S.C. § 154(a)(2) Fed. R. Civ. P. 50		11 12 17 17 .7, 16, 17 7 4, 24
Act of Apr. 10, 1790, 1 Stat. 109 Act of July 4, 1836, 5 Stat. 117 Patent Act of 1870, 16 Stat. 198 Pub. L. 89-83, 79 Stat. 261 Pub. L. 94-131, 89 Stat. 691 35 U.S.C. § 112 35 U.S.C. § 154(a)(2) Fed. R. Civ. P. 50 Fed. R. Civ. P. 51		11 12 17 17 .7, 16, 17 7 4, 24

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## BRIEF OF LITTON SYSTEMS, INC. AS AMICUS CURIAE IN SUPPORT OF RESPONDENT

#### INTEREST OF AMICUS

With the consent of the parties, amicus curiae Litton Systems, Inc. ("Litton"), hereby submits this brief in support of respondent Hilton Davis Chemical Co., to urge this Court to affirm the en banc decision of the Federal Circuit regarding infringement under the doctrine of equivalents. Although Litton has no interest in the outcome of the specific case at bar, it has a strong and abiding interest in the questions presented: (1) whether this Court should abandon the traditional understanding of the doctrine of equivalents as elaborated in almost two centuries of judicial development, culminating in Graver Tank & Manufacturing Co. v. Linde Air Prods., 339 U.S. 605 (1950), and in hundreds of subsequent cases in the lower courts; and (2) whether - if this Court were to discard or modify the doctrine of equivalents - it would be free to ignore the settled expectations of patent holders, who have disclosed their inventions to the public through the patent process in the expectation that those inventions would be protected by the doctrine of equivalents as historically understood.

These questions have wide ramifications and enormous practical importance for many parties. For example, Litton is a technology-based company whose business activities depend heavily on innovation and intellectual property. Litton sought and obtained its patents on the express and judicially induced expectation that their enforceability was defined in part by the doctrine of equivalents as enunciated in *Graver Tank*. To deprive a patentee of that protection after the fact would constitute an impermissible taking of its property for public use without just compensation.

## INTRODUCTION AND SUMMARY OF ARGUMENT

Petitioner urges "[a] clean abandonment of the 'doctrine of equivalents'" and maintains that there is no good reason for this

<sup>&</sup>lt;sup>1</sup> Letters reflecting written consent of the parties to the submission of this brief have been filed with the Clerk of the Court.

Court to "follow Graver at all." Pet. Br. 12. According to petitioner, the doctrine of equivalents "flout[s]" the principle that a patent holder's property right is defined by its patent claim (id. at 11), and the doctrine must at minimum be dramatically pruned.

Thus, petitioner urges this Court to ignore settled law and radically narrow, if not abolish altogether, a long-accepted feature of patent law judicially crafted to protect patentees from infringement by devices and methods that use substantially the same means, working substantially the same way, to accomplish substantially the same result. This Court should reject petitioner's request and affirm the *en banc* decision of the Federal Circuit.

I. The doctrine of equivalents reflects principles of English common law and has been painstakingly elaborated through almost two centuries of federal judicial development. The doctrine protects the patents of inventors who have made substantial investments to develop new products and processes, and who have chosen to disclose their inventions to the world through the patent application process. Without the doctrine of equivalents, patent holders would be "at the mercy of verbalism," and courts would be forced to "subordinat[e] substance to form." Graver Tank, 339 U.S. at 607.

Congress has never displaced the equivalents doctrine by statute or expressed any opposition to it. And when Justice Black raised virtually all of petitioner's objections to the doctrine of equivalents almost half a century ago in *Graver Tank*, a majority of this Court flatly rejected his arguments. Although Congress has repeatedly amended the patent code in the intervening decades, it has not accepted or acted on Justice Black's criticisms. Accordingly, this Court should continue to reject those arguments today and should defer to Congress if there is a need to alter a doctrine on which current patentees have relied in good faith.

Petitioner contends that the doctrine of equivalents clashes with a patentee's duty to describe the invention in detail and with sufficient clarity to satisfy the statutory criteria of 35 U.S.C. § 112. The central fallacy in this argument is that it confuses two distinct elements of patent infringement actions. As this Court made clear just last month in *Markman v. Westview Instruments, Inc.*, No. 95-

26, 64 U.S.L.W. 4263 (Apr. 23, 1996), "[t]he two elements of a simple patent case [are] [1] construing the patent and [2] determining whether infringement occurred." *Id.* at 4267. Petitioner assumes that the doctrine of equivalents relates to the *first* element and that it operates to enlarge a patent claim. But in fact the doctrine is logically confined to the *second* element — determining whether infringement has occurred — and has always been invoked solely in that context. Accordingly, the doctrine is completely consistent with the patent scheme devised by Congress. Indeed, in the *Markman* decision, this Court stated that a patent "functions to forbid not only exact copies of an invention, but [also] products that go to 'the heart of the invention but avoid the literal language of the claim by making a noncritical change" or "deviat[e] from the core design in some noncritical way." *Id.* at 4264 & n.1.

Notably, both the United States and the American Intellectual Property Law Association take the position, in briefs submitted amici curiae, that the statutory patent scheme has not displaced the doctrine of equivalents or replaced it with a judicial inquiry into the alleged infringer's state of mind. Even several of petitioner's own amici decline to endorse its sweeping argument. The Intellectual Property Owners observe that the doctrine of equivalents "is entirely consistent with th[e] [statutory] 'claiming' requirement" and that petitioner's argument "is foreclosed by Congress's ratification of the longstanding doctrine when, in 1952, Congress reenacted without change the law of infringement." Br. Amicus Curiae at 2, 3. The Information Industry Counsel and Intel Corporation similarly agree that the doctrine of equivalents has not been superseded by Congress.

In short, there is no real support for petitioner's request that this Court effectively abolish the doctrine of equivalents. Nor is there any merit to petitioner's alternative suggestion that this Court radically restructure the doctrine by introducing heretofore unknown limits on its application. Such restructuring would eviscerate the ability of the doctrine to protect patentees from infringement. Br. of the United States 21-23 & n.7. In addition, petitioner's argument flies in the face of longstanding precedent.

See, e.g., Sanitary Refrigerator Co. v. Winters, 280 U.S. 30, 42 (1929) (later patented improvement infringed earlier patent under the doctrine of equivalents); SRI Intern. v. Matsushita Corp. of America, 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc) ("The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention.").

Finally, the Court of Appeals correctly held that application of the doctrine of equivalents is a matter for the jury, subject to proper instructions from the court. That traditional rule has been observed since the doctrine's inception. And there is a sound Seventh Amendment reason for it: The doctrine of equivalents is part of the inquiry into whether infringement has occurred. As this Court held in Markman, and as it has held repeatedly since the 19th century, the infringement inquiry is one of fact committed to the jury. See, e.g., Silsby v. Foote, 55 U.S. (14 How.) 218, 225 (1852); Winans v. Denmead, 56 U.S. (15 How.) 330, 344 (1853).

Following precedent does not mean, as petitioner and some amici suggest, that the jury is free to decide the equivalents question at whim; rather, the courts give juries ample guidance through the clear and focused instructions that have been customary at least since Graver Tank. Any fear of an irrational jury is groundless, because a trial court has the authority to grant judgment as a matter of law or a new trial where the requirements of Fed. R. Civ. P. 50 and 59 are satisfied. But this case does not present an opportunity to complain about the guidance given the present jury, or to criticize the jury charge, for it is undisputed that Warner-Jenkinson did not object to the jury instruction in this case. Pet. App. 21a.

II. In any event, if this Court were to make any significant alteration in the doctrine of equivalents, such a ruling would have to be purely prospective and applicable only to patent applications filed after this Court's decision, or at most to patents issued after that date. In deciding to invest the substantial sums necessary to develop patents, and in deciding to file patent applications that disclose their otherwise secret inventions to the world, patent holders justifiably rely on the fabric of legal rules available to

enforce their property rights. The doctrine of equivalents is more than a strand in that fabric; it is fundamental to the very design. To abolish or significantly diminish the doctrine retroactively would disregard the basis of the bargain on which the patent holder was induced to rely. Accordingly, a retroactive ruling in this case would constitute a impermissible taking of property for public use without just compensation, and would also violate due process.

### ARGUMENT

# I. THE COURT OF APPEALS' VIEW OF THE DOCTRINE OF EQUIVALENTS WAS CORRECT

The Court of Appeals for the Federal Circuit properly recognized that "[t]his case presents an opportunity to restate — not to revise — the test for infringement under the doctrine of equivalents." Pet. App. 6a. The doctrine of equivalents is a settled principle of patent law, and there is no reason to disturb it.

## A. The Court of Appeals' Decision Is Correct under Graver Tank

The Court of Appeals held that "[o]ften the function-way-result test will suffice to show the extent of the differences" between the claimed and accused products and, although it noted that "[o]ther factors, . . . such as evidence of copying or designing around, may also inform the test," it reasoned that, ultimately, "a finding of infringement under the doctrine of equivalents requires proof of insubstantial differences." Pet. App. 17a.

That decision is a faithful restatement of this Court's ruling in Graver Tank, which held that the doctrine of equivalents could be invoked "against the producer of a device 'if it performs substantially the same function in substantially the same way to obtain the same result." 339 U.S. at 608 (citation omitted). This Court explained that "[t]he theory on which it is founded is that 'if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape." Id. (quoting Union Paper-Bag Machine Co. v. Murphy, 97 U.S. 120, 125 (1877)). This

Court added that the doctrine was above all one of "wholesome realism," and that "[w]hat constitutes equivalency must be determined against the context of the patent, the prior art, and the particular circumstances of the case. Equivalence, in the patent law, is not the prisoner of a formula and is not an absolute to be considered in a vacuum." *Id.* at 609. This approach is precisely the one taken by the Federal Circuit.

Furthermore, in Graver Tank, this Court was unpersuaded by the very arguments that petitioner advances here, almost all of which were offered in dissent by Justice Black in Graver Tank. Justice Black argued that the doctrine of equivalents is inconsistent with the congressionally devised patent scheme and its requirement of specific claiming, 339 U.S. at 613-14 (dissenting opinion); that the doctrine is inconsistent with the principle that "the function of claims . . . is to exclude from the patent monopoly field all that is not specifically claimed," id. at 614; that there is no need for the doctrine in light of the statutory provision for reissue of patents, id. at 614-15; that the doctrine would produce uncertainty and foster litigation, id. at 617; and that in any event it could not be applied in that case because the defendants in the infringement action were not accused of acting in subjective bad faith. Id. at 613.

Recognizing that an infringer could change the form while infringing the substance of a patent claim, this Court decisively rejected those arguments 46 years ago, and it should reject them again today. Graver Tank was correct as a matter of logic, precedent, and policy. On countless occasions since 1950, patentees, district courts, and courts of appeals have relied on it as the authoritative exposition of the doctrine of equivalents.

1. The stated objective of the Constitution in granting Congress the power to legislate in the area of intellectual property is to "promote the Progress of Science and useful Arts." Art. I, § 8, cl. 8. "The patent laws promote this progress by offering a right of exclusion for a limited period as an incentive to inventors to risk the often enormous costs in terms of time, research, and development." Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 480 (1974). "In return for the right of exclusion... the patent laws impose upon the inventor a requirement of disclosure." Id. The

patent laws require that the patent application shall include a full and clear description of the invention and "of the manner and process of making and using it," 35 U.S.C. § 112, so that any person skilled in the art may make and use the invention at the expiration of the period of exclusion. 35 U.S.C. § 154(a)(2). This disclosure requirement ensures that "the knowledge of the invention enures to the people, who are thus enabled without restriction to practice it and profit by its use." United States v. Dubilier Condenser Corp., 289 U.S. 178, 187 (1933). Thus, the inventor must choose between retaining his invention as a trade secret or putting in the public's hands and receiving a patent. "As Judge Learned Hand once put it: . . . "he must content himself with either secrecy or legal monopoly." Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 149 (1989) (citation omitted).

The doctrine of equivalents plays a vital role in ensuring that the patent holder is not robbed of the benefit of this congressional bargain. For example, it may be impossible to foresee all of the development of new technologies - like microprocessors - that might permit competitors to infringe the substance of a patent while circumventing its literal terms. The doctrine of equivalents assures that patent holders are not "at the mercy of verbalism," and that courts are not forced to "subordinat[e] substance to form." Graver Tank, 339 U.S. at 607. "[T]he purpose of the doctrine of equivalents is to secure for the inventor a just reward for his or her invention." Sarkisian v. Winn-Proof Corp., 697 F.2d 1313, 1321 (9th Cir. 1983). The doctrine reflects the sound view that "the patentee should not be deprived of the benefits of his patent by competitors who appropriate the essence of an invention while barely avoiding the literal language of the claims." London v. Carson Pirie Scott & Co., 946 F.2d 1534, 1538 (Fed. Cir. 1991). Further, the doctrine of equivalents encourages competitors to innovate, by preventing mere copying and forcing would-be infringers to "invent[] around a patent by making a substantial change." Id.

As Judge Newman remarked in the Federal Circuit, "the major contribution of the doctrine of equivalents is now, and always has been, to the idea of a fairer, less technocratic, more practical patent system; one that is oriented toward encouraging technologic[al] innovation and discouraging free riding." Pet. App. 44a (concurring opinion). "[T]he doctrine of equivalents can contribute a degree of added investment confidence to the inherently risky environment of new technologies." Id. So long as patentees have confidence in the patent system, they will continue to patent and the body of knowledge released to the public will continue to grow, even if petitioner were right that copyists might lose confidence in predicting whether their acts infringe. If, on the other hand, patentees lose confidence in the system and choose to keep their inventions secret, the body of knowledge released to the public will stagnate, even if increased copying promoted short-term price competition. Sean Moorhead, The Doctrine of Equivalents: Rarely Actionable Non-Literal Infringement of the Second Prong of Patent Infringement Charges?, 53 OHIO ST. L.J. 1421, 1427-28 (1992). International comparisons demonstrate the importance of the doctrine of equivalents in fostering techological innovation. See Bernard R. Pravel, Why the United States Should Adopt the First-to-File System for Patents, 22 St. MARY'S L.J. 797, 807 (1991) ("[T]he doctrine of equivalents . . . is not available in most countries . . . Thus, foreign patents are often so restricted in their protection that they are of insignificant or no value.").

2. Petitioner nonetheless contends that Graver Tank "stands in unavoidable and well-recognized tension with [a] long line of this Court's cases." Pet. Br. 43. To the contrary: the doctrine of equivalents is a traditional principle of patent law employed since the beginning of patent litigation. The doctrine traces to English common law, appearing, for example, in Administrators of Calthorp v. Waymans, 84 Eng. Rep. 966, 966 (K.B. 1676) (differences between patented engine and accused device "not material," because "though it vary in some circumstances so it be the same in the main"), and with respect to a 1695 patent granted by Parliament. See Christine MacLeod, INVENTING THE INDUSTRIAL REVOLUTION: THE ENGLISH PATENT SYSTEM 1660-1800, at 73 (1988). In the United States, the doctrine was reflected in Justice Story's charge to a jury, as circuit justice, that "[m]ere colorable differences, or slight improvements, cannot shake the

right of the original inventor." Ordiorne v. Winkley, 18 F. Cas. 581, 582 (C.C.D.Mass. 1814) (No. 10,432). Justice Bushrod Washington similarly instructed a jury that, "[w]here the accused and patented] machines are substantially the same, and operate in the same manner to produce the same result, they must in principle be the same." Gray v. James, 10 F. Cas. 1015, 1016 (C.C.D.Pa. 1817) (No. 5,718); see also Whitney v. Carter, 29 F. Cas. 1070, 1078 (C.C.D.Ga. 1810) (No. 17,583) (using similar language); Wyeth v. Stone, 30 F. Cas. 723, 726 (C.C.D.Mass. 1840) (No. 18,107) (Story, Circuit Justice) ("[e]ach [device] performs the same service, substantially in the same way").

In the seminal decision of Winans v. Denmead, 56 U.S. (15 How.) 330 (1853) — on which the unanimous opinion in Markman relied (see 64 U.S.L.W. at 4267) — this Court held that the question of infringement turned on whether the accused device could be said "substantially to embody the patentee's mode of operation, and thereby attain the same kind of result as was reached by his invention." 56 U.S. at 344. In Union Paper-Bag Mach. Co. v. Murphy, 97 U.S. (7 Otto) 120 (1877), this Court found that "[a]uthorities concur that the substantial equivalent of a thing, in the sense of the patent law, is the same as the thing itself; so that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form, or shape." Id. at 125.

By the time of Cimiotti Unhairing Co. v. American Fur Refining Co., 198 U.S. 399, 406 (1905), this Court was able to describe the doctrine of equivalents as "well settled." Two decades later, this Court reafffirmed the doctrine in Sanitary Refrigerator Co. v. Winters, 280 U.S. 20, 41-42 (1929). Noted commentators of all

<sup>&</sup>lt;sup>2</sup> See also Burr v. Duryee, 68 U.S. (1 Wall.) 531, 572 (1864) ("An infringement involves substantial identity, whether that identity be described by the terms, 'same principle,' same 'modus operandi,' or any other."); Seymour v. Osborne, 78 U.S. (11 Wall.) 516, 556 (1870) (patentees "are entitled in all cases to invoke to some extent the doctrine of equivalents"); Gould v. Rees, 82 U.S. (15 Wall.) 187, 192 (1872) (inventors "have the . . . right to suppress every other subsequent improvement, not substantially different from what they have invented and secured by letters-patent."); Ives

eras have also approved of the doctrine of equivalents. See 1 William C. Robinson, THE LAW OF PATENTS FOR USEFUL INVENTIONS §§ 245-258, at 334-54 (1890); Albert H. Walker, TEXT-BOOK OF THE PATENT LAWS §§ 349-367, at 252-67 (1895); 6 LIPSCOMB'S WALKER ON PATENTS §§ 22:34-22:40, at 541-56 (3d ed. 1987); see also Feed Serv. Corp. v. Kent Feeds, Inc., 528 F.2d 756, 764 (7th Cir.) (Stevens, J., dissenting in part) (applying doctrine of equivalents), cert. denied, 429 U.S. 870 (1976).

3. In response to this overwhelming body of authority, petitioner insists that the doctrine of equivalents is inconsistent with the statutory requirement that the subject of a patent be precisely defined in the patent claims. 35 U.S.C. § 112. But this supposed inconsistency is a mirage. The central fallacy in petitioner's argument is that it confuses the question of claim construction with the issue of patent infringement.

To be sure, patents "must comply accurately and precisely with the statutory requirements as to claims of invention and discovery." Pet. Br. 19 (quoting General Elec. Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938)). But, as this Court observed only recently in Markman, there are two distinct elements of a patent claim: construing the patent, and determining whether infringement has occurred. See 64 U.S.L.W. at 4267. The doctrine of equivalents has always been applied as part of the second inquiry.<sup>3</sup>

Accordingly, petitioner's alleged inconsistency is a figment of its imagination. There is no conflict between requiring patentees to spell out the specific metes and bounds of their patent claims with as much specificity as possible — and then applying the doctrine of equivalents to determine whether an accused device has trespassed upon that defined property zone. See Br. of United States 14-15. On the contrary, the doctrine of equivalents is a vital supplement to the congressionally devised scheme of specific claiming. "[A]s a prescription against sterile literalism . . . the doctrine of equivalents is fully consistent with the notion that the claim measures the scope of the patent monopoly." 4 Donald S. Chisum, PATENTS § 18.04[1], at 18-74 (1995).

4. Similarly, petitioner's suggestion that the doctrine of equivalents somehow disappeared with the adoption of the 1870 Patent Act (Pet. Br. 15-18) ignores the fact that the doctrine has been consistently enforced by the courts in the ensuing 126 years. Petitioner argues that a sea change swept away the doctrine of equivalents. In truth, the sea stayed still.

The patent laws have long contained a requirement that a patentee spell out the invention in sufficient detail to distinguish the prior art and to notify the public of the protection the patent confers. The very first patent act required that letters patent "describ[e] the said invention or discovery, clearly, truly, and fully." Act of Apr. 10, 1790, ch. 7, § 1, 1 Stat. 109. The applicant for a patent was at the time required to submit "a specification in writing, containing a description . . . of the thing or things by him or them invented or discovered, . . . which specification shall be so particular . . . as . . . to distinguish the invention or discovery from other things before known and used." Id. § 2. The Patent Act of 1836 similarly required that the applicant "shall particularly specify and point out the part, improvement, or combination, which he claims as his own invention." Act of July 4, 1836, ch. 357, § 6, 5 Stat. 117. Specific claiming was already the practice, even in 1836.

v. Hamilton, 92 U.S. (2 Otto) 426, 430 (1875) ("whether the defendants use the same or equivalent means; that is, the same, or substantially the same, combination of mechanical devices"); Boyden Power-Brake Co. v. Westinghouse, 170 U.S. 537, 569 (1898) (doctrine covers infringer who "reach[es] the same result" by "substantially the same or similar means"); Kokomo Fence Mach. Co v. Kitselman, 189 U.S. 8, 24 (1903) (test is whether the devices at issue share "that identity of means and identity of operation which must be combined with identity of result to constitute infringement"); Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 421 (1908) (doctrine of equivalents is not limited to pioneer inventions).

<sup>&</sup>lt;sup>3</sup> See, e.g., Kokomo Fence Mach. Co v. Kitselman, 189 U.S. 8, 23 (1903) ("the question is whether the specific improvements of the one actionable invaded the domain of the other." i.e., whether there "was a substantial

difference between the inventions"); Hoyt v. Horne, 145 U.S. 302, 308 (1892) (infringement issue includes equivalence inquiry); Imhaeuser v. Buerk, 101 U.S. (11 Otto) 647, 664 (1879) (same).

See Karl Lutz, Evolution of the Claims of U.S. Patents, 20 J. PAT. OFF. Soc'y 457, 464 (1938).

The Patent Act of 1870 modified the statutory language only slightly, substituting the phrase "particularly point out and distinctly claim the part . . . which he claims." Patent Act of 1870. ch. 230, § 26, 16 Stat. 198, 201. Not surprisingly, the history of the Patent Act of 1870 suggests that the change in statutory text was not understood by anyone to have anything like the significance that petitioner would now attribute to it. The alteration was not mentioned in the records of the enactment. See Cong. Globe, 41st Cong., 2d Sess. 2681-83 (1870). The Commissioner of Patents subsequently wrote that "[i]n 1870 the patent law was revised, but the revision was in the nature of a consolidation of the statutes then in force." Charles Eliot Mitchell, Commissioner of Patents, An Address Delivered at the Proceedings of the Congress on the "Birth and Growth of the American Patent System" (1890). reprinted in PATENT CENTENNIAL CELEBRATION PROCEEDINGS AND ADDRESSES 52 (1891).

Thus, the doctrine of equivalents was developed alongside a system in which patentees were required to detail the nature and scope of their claims. And increasing specificity in claim style makes the need for the doctrine of equivalents *more* urgent, not less; as Judge Newman commented in the Federal Circuit, "the increasing specificity in claim style probably made it easier for the 'unscrupulous copyist,' the words of *Graver Tank*, to appropriate the substance of the invention while evading the letter of the claims." Pet. App. 37a (concurring opinion).

5. Petitioner alternatively urges that, if this Court does not abandon the doctrine of equivalents altogether, it should nonetheless hold that the doctrine does not extend to matters surrendered during the patent application process (whatever the reason) or to matters not disclosed as equivalent in the patent application. But most of this Court's decisions in the course of the doctrine's lengthy development did not even mention the principles proposed by petitioner, let alone apply them in holdings. And

Graver Tank's holding cannot be so restricted. Graver Tank reaffirmed Sanitary Refrigerator (see 339 U.S. at 608), which expressly rejected limiting equivalents to those disclosed as such in the patent. Graver Tank also refused to adopt any rigid "formula" (339 U.S. at 609) such as that proposed by petitioner.

Moreover, the facts of Graver Tank cannot be used to narrow the doctrine, for they prove just the opposite of what petitioner claims. As Justice Black observed, "the similar use of manganese in prior expired patents, referred to in the Court's opinion, raises far more than a suspicion that its elimination from the valid claims stemmed from fear that its inclusion by name might result in denial or subsequent invalidation of respondent's patent." 339 U.S. at 616-17 (dissenting opinion). He concluded that "it would be frivolous to contend that failure specifically to include that substance in a precise claim was unintentional." Id. at 616. Yet a majority of this Court was willing to apply the doctrine of equivalents because there had been no surrender to overcome a prior art reference.

Hence, it is well established that the doctrine of equivalents is not limited to equivalents disclosed in the patent. Indeed, "[i]n order to be an equivalent of another, it is not necessary that the device have been known at the time of the machine which contains the latter." 6 LIPSCOMB'S WALKER ON PATENTS §§ 22:34-22:40, at 541-56 (3d ed. 1987). The patent owner is not expected to

<sup>4</sup> See, e.g., Albert H. Walker, TEXT-BOOK OF THE PATENT LAWS §§ 354-55,

at 256-59 (1885) ("Whether a device, in order to be an equivalent of another, must have been known at the time of invention or of the patent . . . [is a] view that seems to have originated in the mind of Justice Clifford . . . [A]fter formulating the doctrine he was content to ignore it . . . No other Supreme Court justice has ever inserted just such doctrine . . . into any opinion of that tribunal. Several cases have been adjudicated in that court, which called for the application of that doctrine, if it is a true one, but it has never been applied to any necessary issue pending therein.").

<sup>&</sup>lt;sup>5</sup> See Cantrell v. Wallick, 117 U.S. 689, 695 (1886); Clough v. Barker, 106 U.S. 166, 177-78 (1882); Machine Co. v. Murphy, 97 U.S. 120, 125 (1878); Cochrane v. Deener, 94 U.S. 780, 790 (1877); Mason v. Graham, 90 U.S. 261, 275 (1875); Burr v. Duryee, 68 U.S. (1 Wall.) 531, 573 (1864); O'Reilly v. Morse, 56 U.S. 62, 123-24 (1854); Texas Instruments, Inc. v. United States

"predict all future developments which enable the practice of his invention in substantially the same way." Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1362 (Fed. Cir. 1983). This Court has held that a later improvement, even if patented, may still violate the doctrine of equivalents if it satisfies the function-way-result test. See Sanitary Refrigerator Co. v. Winters, 280 U.S. 20, 40, 43 (1929); see also Atlas Powder Co. v. E.I. Du Pont De Nemours & Co., 750 F.2d 1569, 1580-81 (Fed. Cir. 1984). Otherwise, unforeseeable technological developments with wide applications, like microprocessors, digital (rather than analog) systems, or new chemical processes, would in effect sweep away existing patents altogether. See Br. of United States 21-23 & n.7.

In addition, it is settled law that file wrapper estoppel prevents a patentee from reclaiming, through the doctrine of equivalents, what was willfully surrendered before the Patent Office only if the reason for the limiting argument or amendment was to delete prior art embodiments that would otherwise have invalidated the patent. This Court should reject petitioner's cavalier attempt to make radical revisions in the doctrine of equivalents without due regard for the careful development of the law in the Federal Circuit.

Int'l Trade Comm'n, 805 F.2d 1558, 1563 (Fed. Cir. 1986); SRI Intern. v. Matsushita Corp. of Am., 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc).

## B. Congress Did Not Displace Graver Tank in the 1952 Patent Act

Petitioner argues that the 1952 Patent Act should be construed as displacing a century of well-settled, judge-made law under the doctrine of equivalents. This argument is flatly wrong as a matter of basic principles of statutory construction.

There is no suggestion that anything in the text of the 1952 Patent Act or in its legislative history remotely shows that Congress intended to overrule *Graver Tank*. It is barely conceivable, and far too speculative to proceed on the assumption, that Congress would have intended to displace so longstanding a feature of patent law without any explicit textual reference or other contemporaneous indication of its decision to do so. This is therefore one of those instances where "Congress' silence . . . can be likened to the dog that did not bark." *Chisom v. Roemer*, 501 U.S. 380, 396 n.23 (1991).

To the contrary, this Court has already determined that the 1952 Patent Act "left intact the entire body of case law on direct infringement." Aro Mfg. Co. v. Convertible Top Replacement Co., 365 U.S. 336, 342 (1961). That body of case law included the doctrine of equivalents. No less an authority than Justice Black (a dissenter in Graver Tank) acknowledged that the purpose of the 1952 Act in relevant part was to codify extant patent law. Aro Mfg., 365 U.S. at 347 n.2 (Black, J., concurring). And even petitioner concedes the principle that "a law designed substantially (even though not entirely) to codify and restate prior law generally is understood to incorporate then-existing judicial interpretations." Pet. Br. 42 (citing Davis v. United States, 495 U.S. 472, 482 (1990); Pierce v. Underwood, 487 U.S. 552, 566-68 (1988)). Indeed, this Court has frequently held, in setting forth ground rules that shape as well as describe how Congress proceeds, that Congress legislates against the background understanding that its enactments incorporate longstanding principles of judge-made law.8

<sup>&</sup>lt;sup>6</sup> See, e.g., Decca Ltd. v. United States, 544 F.2d 1070, 1080-81 (Ct. Cl. 1976) (digital devices infringed claims relating to analog devices, even though later-developed digital devices were not predicted by, let alone eliminated from the scope of, the patent).

<sup>&</sup>lt;sup>7</sup> See, e.g., Laitram Corp. v. NEC Corp., 952 F.2d 1357, 1358 (Fed. Cir. 1991); Insta-Foam Products, Inc. v. Universal Foam Systems, Inc., 906 F.2d 698, 703 (Fed. Cir. 1990); Moeller v. Ionetics, Inc., 794 F.2d 653, 658-60 (Fed. Cir. 1986); Loctite Corp. v. Ultraseal Ltd., 781 F.2d 861, 871 (Fed. Cir. 1985); Hughes Aircraft Co. v. United States, 717 F.2d 1351, 1362 (Fed. Cir. 1983); Omark Indus., Inc. v. Textron, 688 F.2d 1242, 1251-52 (9th Cir. 1982).

<sup>&</sup>lt;sup>8</sup> See, e.g., Square D. Co. v. Niagara Frontier Tariff Bureau, Inc., 476 U.S. 409, 419, 421-22 (1986) (upholding "continued viability" of prior case law

The only remotely relevant change in the 1952 Patent Act confirms that Congress did not intend to displace the doctrine of equivalents. Paragraph 6 of § 112 added the concept of equivalents as a basis for sustaining previously invalid "means" claims regarding elements in a combination. 35 U.S.C. § 112, ¶ 6.9 The plain purpose of this provision was to restore to patentees the ability to use in their claims broad "means plus function" language. which this Court had held was unduly vague. Halliburton Oil Well Cementing Co. v. Walker, 329 U.S. 1 (1946). Thus, this statutory change confirms that Congress was fully aware of the concept of equivalents and simply adapted it to a new function: salvaging vague claims by extending the consideration of equivalents to products or processes disclosed in specifications. As petitioner's own amici recognize, it would be perverse to afford the benefits of the doctrine of equivalents to patentees who use the vaguest claim language, while denying it to those who set forth their claims clearly and distinctly. Br. of Intellectual Property Owners 14-15.

Moreover, since 1952, the lower courts have applied the doctrine of equivalents in hundreds of decisions. 10 Congress has taken no action indicating that it disagrees with this interpretation of the patent laws, even though Congress has felt the need to amend

the patent code on numerous occasions during this time. 11 Congressional acquiescence in this established judicial practice — and Congress' ability to change it prospectively at any time — counsel heavily against departing from the doctrine of equivalents. "Considerations of state decisis have special force . . . [where] Congress remains free to alter what [this Court] ha[s] done." Eastman Kodak Co. v. Image Technical Services, Inc., 504 U.S. 451, 479 n.29 (1992) (quoting Patterson v. McLean Credit Union, 491 U.S. 164, 172-73 (1989)).

## C. Under Markman and this Court's 19th-Century Predecents, Application of the Doctrine of Equivalents Must Be Left for the Jury

In Markman v. Westview Instruments, Inc., No. 95-26, 64 U.S.L.W. 4263 (Apr. 23, 1996), this Court clarified the respective roles of the judge and jury in suits for patent infringement. This Court began by observing that "there is no dispute that infringement cases today must be tried to a jury, as their predecessors were more than two centuries ago." Id. at 4265. This Court further noted that, at common law, juries were charged with the responsibility of deciding not only the historical question of whether infringement occurred, but also factual questions relating to enablement (whether the specification described the invention well enough to permit members of the trade to reproduce it) and novelty (whether any essential part of the patent had been previously disclosed to the public). Id. at 4266. This Court indicated that these sometimes complex and technical questions were solely for the jury.

But this Court found that there was insufficient evidence regarding 18th-century practice in patent cases "to support an argument by analogy that today's construction of a claim should be a guaranteed jury issue." *Id.* This Court focused on the fact that claims interpretation is essentially an exercise in reviewing documentary evidence, and it remarked that "in other kinds of cases during this period judges, not juries, ordinarily construed written

that "represents a longstanding statutory construction that Congress has consistently refused to disturb, even when revisiting this specific area of law"); Harper & Row v. Nation Enterprises, 471 U.S. 539, 549 (1985) (concluding that Congress meant to incorporate in the Copyright Act the common law regarding "fair use"); Tower v. Glover, 467 U.S. 914, 920 (1984) (inferring from legislative silence that Congress did not intend to abrogate common-law immunities for governmental officers when it imposed liability under 42 U.S.C. § 1983).

<sup>&</sup>lt;sup>9</sup> Although equivalence analysis under § 112, ¶ 6 is not the same as that under the doctrine of equivalents, see Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1043 (Fed. Cir. 1993), the statutory change indicates that Congress was familiar with the equivalence concept.

<sup>&</sup>lt;sup>10</sup> By our count, the doctrine has been applied since 1952 in 177 published decisions in the courts of appeals and 342 decisions in the district courts.

<sup>&</sup>lt;sup>11</sup> Section 112, for example, was amended in 1965, see Pub. L. 89-83, § 9, 79 Stat. 261, and again in 1975. Pub. L. 94-131, § 7, 89 Stat. 691.

documents." Id.

This Court also consulted 19th-century American practice, and it found instructive Justice Curtis' explication of the elements of a patent infringement claim: "construing the patent... is an issue of law, to be determined by the court," while "determining whether infringement occurred... is a question of fact, to be submitted to a jury." Id. at 4267 (emphasis added and quoting Winans v. Denmead, 56 U.S. at 338). All of the considerations invoked in Markman demonstrate that application of the doctrine of equivalents is properly reserved for the jury.

1. Unlike claim construction, the doctrine of equivalents has always been a matter for the jury as part of the inquiry into whether infringement has occurred.<sup>12</sup> The doctrine of equivalents is not part of the process of claim construction, which this Court held in *Markman* was properly reserved for the court. Rather, just as the jury must determine literal infringement through its common sense and understanding of technical issues, so it must also decide infringement under the doctrine of equivalents using the same tools it would use to resolve the issue of literal infringement.

The rule is long-settled that "whether two arts or devices are 'equivalent' is a matter of fact for the jury." 1 William C. Robinson, THE LAW OF PATENTS FOR USEFUL INVENTIONS § 246, at 336 n.1 (1890). The doctrine of equivalents was applied in a 1676 infringement action tried before a jury. Administrators of Calthorp v. Waymans, 84 Eng. Rep. 966 (K.B. 1676). Consistent with English common-law practice, <sup>13</sup> Justices Story and Washington,

riding circuit in 1814 and 1817, held that juries were to apply the doctrine of equivalents. See pp. 8-9, supra. And when the full Court first encountered the doctrine — in a legal action for infringement — it squarely held that the question of "whether, in point of fact, the defendant's [devices] did copy the plaintiff's invention, in the sense above explained [i.e., by an equivalent], is a question for the jury." Winans v. Denmead, 56 U.S. (15 How.) 330, 344 (1853). This Court has never retreated from that basic principle where the jury is the trier of fact.

In Tucker v. Spalding, 80 U.S. (13 Wall.) 453, 455 (1872), for example, this Court explained that disputed factual issues on the question of the "diversity or identity" of the patented and accused devices "must be submitted to the jury, if there is so much resemblance as raises a question at all." This Court added:

And though the principles by which the question must be decided may be very largely propositions of law, it still remains the essential nature of the jury trial that while the court may on this mixed question of law and fact, lay down to the jury the law which should govern them, so as to guide them to truth, and guard them against error, and may, if they disregard instructions, set aside their verdict, the ultimate response to the question must come from the jury.

<sup>&</sup>lt;sup>12</sup> Although sometimes described as "equitable," the doctrine of equivalents has that flavor only in the broadest sense of reflecting "general fairness," not in the sense of the law-equity distinction for Seventh Amendment purposes. Pet. App. 16a. Notably, *Graver Tank* did not characterize the doctrine as "equitable."

<sup>&</sup>lt;sup>13</sup> See Huddart v. Grimshaw, 1 Webs. Pat. Cas. 85, 95 (1803) (jury to determine whether "the same effect in substance is produced"); Hill v. Thompson and Forman, 1 Webs. Pat. Cas. 239, 242 (1818) (jury asked "whether the mode of working by the defendant has, or has not, been essentially or substantially different"); Jones v. Pearce, 1 Webs. Pat. Cas. 122,

<sup>124 (1832) (</sup>jury instructed: "if you think it is applied in the same way as according to the plaintiff's patent . . . then the want of two or three circumstances in the defendant's wheel, which are contained in the plaintiff's specification," would not preclude infringement); Morgan v. Seaward, Goodeve's Pat. Cas. 307, 307 (1835) ("You [the jury] are to look to the substance and not to the mere form"); Walton v. Potter & Horsfall, 1 Webs. Pat. Cas. 585, 587 (1841) (jury to "see whether in reality, in substance, and in effect, the defendants have availed themselves of the plaintiff's invention"); De La Rue v. Dickenson, Goodeve's Pat. Cas. 164, 166 (1857) (whether "the defendant has used substantially the same means to obtain the same result" is question "which the judge is bound to submit to the jury"); John Norman, NORMAN ON PATENTS \*134 (1853) ("[T]he jury must consider whether the defendant's machine is only colourably different. . . . [T]he jury should look to the substance, and not the mere form; and if it is in substance an infringement, they ought to find it so.").

Id. So too in Gould v. Rees, 82 U.S. (15 Wall.) 187 (1872) — on which this Court relied in Graver Tank, 339 U.S. at 608 — this Court explained a century and a quarter ago that "if the ingredient substituted performs substantially the same function as the one withdrawn it would be correct to instruct the jury that such a substitution of one ingredient for another would not avoid the charge of infringement." 82 U.S. at 193 (emphasis added).

Similarly, in Coupe v. Royer, 155 U.S. 565 (1895), this Court remarked that it had "had occasion, more than once, to reverse the trial courts for taking away from the jury the question of infringement," including whether differences between the devices are "material." Id. at 577, 579; see also Royer v. Schultz Belting Co., 135 U.S. 319, 325 (1890) ("whether the defendant's machine infringed [the patentee's] claims, was a question of fact for the jury to determine, on all the evidence which the case might present. It was not a matter of mere judicial knowledge that the mechanical differences between the two machines were material"); Keyes v. Grant, 118 U.S. 25, 36 (1886) (whether patent and publication "described the same thing . . . was a question of fact properly left for determination to the jury"); Tyler v. Boston, 74 U.S. (7 Wall.) 327, 330-31 (1869) ("whether one compound of given proportions is substantially the same as another compound varying in the proportions — whether they are substantially the same or substantially different — is a question of fact and for the jury"); Carver v. Hyde, 41 U.S. (16 Pet.) 513, 520 (1842) ("whether the manner was the same in substance or not, was a question of fact for the jury").14

2. Submitting the issue of equivalents to the jury is but a logical corollary of the rule that, as this Court recognized in Markman, factual disputes relating to the question of infringement have, under the Seventh Amendment, always been decided by a jury when it is the trier of fact. 64 U.S.L.W. at 4265, 4267. Indeed, in Markman, this Court discussed the decision in Bischoff v. Wethered, 9 Wall. 812 (1870), in precisely these terms. This Court explained that Bischoff is "a case in which the Court drew a line between issues of document interpretation and product identification, and held that expert testimony was properly presented to the jury on the latter, ultimate issue, whether the physical objects produced by the patent were identical." 64 U.S.L.W. at 4268 In Markman, this Court acknowledged that Bischoff had recognized the primacy of the jury over questions regarding "the character of the thing invented, which is sought in questions of identity and diversity of inventions." Id. (quoting Bischoff, 9 Wall. at 816).

Also instructive in this respect is Silsby v. Foote, 55 U.S. (14 How.) 218 (1852), where the opinion for the Court was delivered by Justice Curtis, the very jurist whose views this Court found authoritative in Markman. See 64 U.S.L.W. at 4267. In Silsby, Justice Curtis held for the Court that a trial judge properly "left... matter[s] of fact to the jury" in determining that the jury was to decide whether an accused device had infringed upon a patented stove. 55 U.S. at 225.

The issue in Silsby was almost identical to that under the doctrine of equivalents: whether the defendant had made a substantial change from the patent claim. In Silsby, the trial court had ruled that the patent covered "a combination of such of the described parts as were combined and arranged for producing a particular effect, viz., to regulate the heat of the stove." Id. at 225. But this construction of the patent claim still left a dispute as to

<sup>&</sup>lt;sup>14</sup> See also May v. County of Fond Du Lac, 27 F. 691, 697 (C.C.E.D.Wis. 1886) ("whether the defendant has used substantially the same means, or mechanically speaking, equivalent means, to accomplish the same result... is a question for the jury to determine."); Tatham v. Le Roy, 23 F. Cas. 718, 719 (C.C.S.D.N.Y. 1850) (No. 13,762) (jury was charged to decide whether devices "were substantially different from those of the plaintiffs"); Blanchard's Gun-Stock Turning Factory v. Warner, 3 F. Cas. 653, 658 (C.C.D.Conn. 1846) (No. 1,521) ("We think it was a question of fact for the jury whether this was a substantial variation or not"); Smith v. Pearce, 22 F.

Cas. 619, 620 (C.C.D.Ohio 1840) (No. 13,089) ("The jury are to judge by an inspection of the models and from the evidence, whether the two machines differ in principle."); Alden v. Dewey, 1 F. Cas. 329, 330 (C.C.D.Mass. 1840) (No. 153) (Story, Circuit Justice) (asking jury, "Are the means used substantially the same, although not in every minute particular?").

which parts were necessary to regulate the heat of a stove. The trial court left this question to the jury. The defendants objected, "desir[ing] the Judge to instruct the jury that the index, the detaching process, and the pendulum, were constituent parts of this combination." Id.

But this Court rejected that challenge: "How could the Judge know this as a matter of law? . . . [I]t therefore became a question for the jury, upon the evidence of experts, or an inspection by them of the machines, or upon both, what parts described did in point of fact enter into, and constitute an essential part of this combination." Id. at 226. This Court explained that it was "a question of fact which of the described parts are essential to produce that result; and to this extent, not the construction of the claim, strictly speaking, but the application of the claim, should be left to the jury." Id.

Silsby, in conjunction with Winans — authored by the same Justice one year later — makes historical practice clear. In Winans, this Court reversed a circuit court that had refused to submit the equivalence question to the jury, and in Silsby, this Court upheld the submission of similar issues to the jury.

3. In Markman, this Court reached the conclusion that the historical evidence was ambiguous regarding the jury's role in interpreting the language of patent claims. Only then did this Court find it useful to look to "functional considerations" (64 U.S.L.W. at 4268) in determining the jury's proper role. Here, there is no ambiguity and thus no need to consider such matters because this Court has held for more than a century that the equivalence question is to be decided by a jury. In any event, practical concerns in this case also militate in favor of the right to jury trial.

In Markman, this Court noted that, at common law, construction of written documents was a task traditionally performed by judges rather than juries. Id. at 4266. And, with respect to contemporary practice, this Court predicted that patent construction would rarely turn on "credibility judgment[s]" or courtroom evaluations of witnesses but rather would typically hinge on review of a cold written record — a process peculiarly within the expertise of judges. 64 U.S.L.W. at 4268.

By contrast, application of the doctrine of equivalents involves

broad-based "inquiries of fact," Continental Paper Bag Co. v. Eastern Paper Bag Co., 210 U.S. 405, 416 (1908), that are obviously not limited to construing written documents. As this Court observed in Graver Tank:

A finding of equivalence is a determination of fact. Proof can be made in any form: through testimony of experts or others versed in the technology; by documents, including texts and treatises; and, of course, by the disclosures of the prior art. Like any other issue of fact, final determination requires a balancing of credibility, persuasiveness and weight of evidence.

339 U.S. at 609-10.

Nor does any supposed need for uniformity — another practical consideration that this Court discussed in Markman only after concluding that the historical evidence was ambiguous - justify denial of the Seventh Amendment right to jury trial. Markman analyzed the value of uniformity solely in the context of "submitting issues of document construction to juries." 64 U.S.L.W. at 4269 (emphasis added). The separate question of infringement has always been a fact-dependent one on which different juries may reach different answers as to different accused devices. If an infringer prevails before one jury, offensive collateral estoppel can restrict a patentee's ability to relitigate an issue. Blonder-Tongue Laboratories, Inc. v. University of Illinois Foundation, 402 U.S. 313 (1971). Conversely, if the patentee prevails, a second infringer with separate counsel and possibly different evidence is entitled to its own opportunity to litigate the issue. If a supposed need for uniformity could justify trenching on the jury's role in applying the doctrine of equivalents, it could justify invading any other aspect of the jury's role in determining whether infringement has occurred - and in fact any aspect of the jury's role in any kind of case in federal court, for different juries are typically allowed to reach different answers as to whether a given product was defective or particular conduct was negligent.

Accordingly, under Markman, the Seventh Amendment requires that factual disputes involving applications of the doctrine of equivalents be submitted to a jury where it is the trier of fact.

4. This does not mean, of course, that the jury is free from all constraint in deciding the question. The court must instruct the jury regarding the proper test to apply (i.e., function, way, result), just as it must with any legal standard — like negligence, product defect, unreasonable restraint of trade, and punitive damages. The Court of Appeals stressed below that the doctrine of equivalents "is an issue of fact to be submitted to the jury in a jury trial with proper instructions." Pet. App. 17a (emphasis added). There need be no danger that the jury will be left without sufficient guidance. And the trial court retains the power to grant judgment as a matter of law and a new trial where appropriate. Fed. R. Civ. P. 50 and 59.

There is no occasion, however, for going further and straitjacketing the jury by instructing it precisely how to apply the doctrine of equivalents in a particular case. See Br. of Information Technology Industry Assn. and Intel Corp. 13 (jury must have "instructions from the court that circumscribe the appropriate function/way/result parameters").<sup>15</sup>

First, under Fed. R. Civ. P. 51, the content of jury instructions is not properly before this Court because Warner-Jenkinson did not object at trial to the instructions given regarding the doctrine of equivalents. Pet. App. 21a.

Second, this Court has already rejected amici's proposal. In Silsby, this Court held that a judge could not "know... as a matter of law" the sort of factual information that amici seek to have incorporated in the jury instructions. 55 U.S. at 226. See also Markman, 64 U.S.L.W. at 4267 ("In order to resolve the Bischoff

suit implicating the construction of rival patents, we considered 'whether the court below was bound to compare the two specifications, and to instruct the jury, as a matter of law, whether the inventions therein described were, or were not, identical.' 9 Wall. at 813 (statement of the case). We said it was not bound to do that, on the ground that investing the court with so dispositive a role would improperly eliminate the jury's function in answering the ultimate question of infringement."); Coupe v. Royer, 155 U.S. at 578 ("counsel cannot require the court to compare the two specifications and to instruct the jury, as a matter of law, whether the inventions therein described are or are not identical"); May v. County of Fond Du Lac, 27 F. 691, 696-97 (C.C.E.D.Wis, 1886) ("An infringement involves substantial identity . . . . No certain, definite rule can be stated by which to determine unerringly, in every case, what will amount to substantial identity. The jury, guided by general principles, must determine each case upon its own circumstances.") (citation omitted).

Third, there are sound reasons behind the traditional rule. Instructing the jury as a matter of law what is or is not "substantially the same" would often predetermine the verdict's outcome and rob the right to jury trial of all meaning. Conversely, the district court would be converted from a tribunal of law to one of science and technology. But district court judges are not "amateur scientists." Daubert v. Merrill Dow Pharmaceuticals, Inc., 113 S. Ct. 2786, 2800 (1993) (Rehnquist, C.J., concurring in part and dissenting in part).

Petitioner's amici urge this Court to place artificial restraints upon the jury that are inconsistent with the Seventh Amendment and not used in any other type of case in the federal courts. "There is neither reason nor authority for employing in a patent trial procedures and practices different from those employed in any other civil trial. Indeed, reason and authority mandate the contrary." Chief Judge Howard T. Markey, On Simplifying Patent Trials, 116 F.R.D. 369, 370 (1987).

<sup>&</sup>quot;reference of the entire issue to the jury was erroneous" (Br. of United States 16 n.3) — a position that would leave substantial authority in the jury. The American Intellectual Property Law Association takes the view that the court should decide "all aspects of claim interpretation — literal and equivalent" but that "[f]actual issues of what the accused device or process is, and whether it falls within the judge-defined claim scope, are reserved to the jury." Br. Amicus Curiae 11. Both briefs were submitted before this Court's decision in Markman, and neither brief addresses the tradition of reserving the equivalents issue to the jury.

## II. ANY CHANGE IN THE DOCTRINE OF EQUIVALENTS SHOULD BE MADE PURELY PROSPECTIVE

For all of the above reasons, this case presents no occasion to depart from the well-established contours of the doctrine of equivalents. But if there were to be any revision in this rule developed by the federal judiciary for almost two centuries, it would at least have to be undertaken with due regard for the settled property rights of patent holders. Accordingly, any ruling in favor of petitioner should be made purely prospective.

1. This Court has long recognized that "[c]onsiderations of stare decisis are at their acme in cases involving property and contract rights, where reliance interests are involved." Payne v. Tennessee, 501 U.S. 808, 828 (1991). The principle is especially salient in this case, for it cannot be disputed that "[r]ights secured to an inventor by letters-patent are property which consists in the exclusive privilege of making and using the invention, and of vending the same to others to be used, for the period prescribed by the Patent Act." Union Paper-Bag Mach. Co. v. Murphy, 97 U.S. (7 Otto) 120, 120 (1877). In addition, the confidential proprietary information disclosed by patentees as part of the patent process is itself a valuable and constitutionally protected property right. See Ruckelshaus v. Monsanto Co., 467 U.S. 986, 1003-04 (1984).

Before deciding whether to commit the substantial sums necessary to develop a new product or process, and to submit a patent application disclosing the invention to the world, a patentee weighs the strength, breadth, and enforceability of a prospective patent, together with other market benefits and risks. In a very real and practical sense, part of a patent holder's property encompasses the extant legal rules upon which he is entitled to rely to enforce his property. The doctrine of equivalents is a significant element in that bundle of rules. Even petitioner's amici concede that "[t]he doctrine of equivalents affects a host of significant business decisions, including: whether to launch products into or remove them from commerce; whether or how to alter designs of products, processes, and machines; and whether to seek or grant licenses. Those decisions influence not only enormous financial commitments but also momentous changes in investment

decisions." Br. of Information Technology Assn. and Intel Corp. 3.

"Investment-backed expectations" are the essence of private property rights. Penn Central Transp. Co. v. City of New York, 438 U.S. 104, 124 (1978). To abolish the doctrine of equivalents or reduce it to a mere opportunity to appeal to a judge's discretion, cf. Perry v. Sindermann, 408 U.S. 593, 603 (1972) (essence of property is more than "subjective expectancy"), would defeat the settled expectations of existing patent holders who justifiably relied on that doctrine's role in "expand[ing] the right to exclude to 'equivalents' of what is claimed." Br. of United States 15 (quoting Wilson Sporting Goods Co. v. David Geoffrey & Assocs., 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990)). 16

2. This Court has long held that "rights secured under the grant of letters patent by the United States [a]re property and protected by the guarantees of the Constitution and not subject therefore to be appropriated even for public use without adequate compensation." William Cramp & Sons Ship & Engine Bldg Co. v. International Curtis Marine Turbine Co., 246 U.S. 28, 39-40 (1918). To alter, retroactively, the terms on which a patent is granted would work an obvious taking of private property. See, e.g., Richmond Screw

<sup>16</sup> Petitioner argues that there can be no justifiable reliance on a doctrine that "has been the subject of expansion, contraction, refinement, and questioning since the Federal Circuit was created." Pet. Br. 49. But such incremental modifications are in the nature of judge-made law. The alleged "meanderings" to which petitioner refers (Pet. Br. 49 n.33) plainly concern peripheral issues, not the existence of the doctrine of equivalents itself. In light of this Court's authoritative decision in Graver Tank, which has now been reaffirmed twice by en banc decisions in the Federal Circuit - once in the instant case, and a decade ago in SRI Intern. v. Matsushita Corp. of America, 775 F.2d 1107, 1123-24 (Fed. Cir. 1985) - the justifiability of relying on the doctrine cannot be doubted. See Chief Judge Howard T. Markey, The Federal Circuit and Congressional Intent, 41 AM. U.L. REV. 577, 579 (1992) ("Such case-by-case development of the law is normal and will doubtless continue. . . . [M]ost observers would agree that a combination of careful decisionmaking and willingness to correct error have resulted in a substantial and consistent body of jurisprudence, the study of which enables counsel to more confidently advise a clientele.").

Anchor Co. v. United States, 275 U.S. 331, 345 (1928) (elimination of infringement action "is an attempt to take away from a private citizen his lawful claim for damage to his property by another private person, which but for this act he would have against the private wrongdoer. This result . . . would seem to raise a serious question . . . under the Fifth Amendment to the Federal Constitution.").

Unlike the Impairment of Contracts Clause, which applies only against legislatures, Tidal Oil Co. v. Flanigan, 263 U.S. 444 (1924), the Takings Clause forbids uncompensated confiscation by the judiciary as well as by the legislative branch. See, e.g., Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1031 (1992); Webb's Fabulous Pharmacies, Inc. v. Beckwith, 449 U.S. 155, 164 (1980). "No more by judicial decree than by legislative fiat may a [government] transform private property into public property without compensation." Stevens v. City of Cannon Beach, 114 S. Ct. 1332, 1334 (1994) (Scalia, J., joined by O'Connor, J., dissenting from the denial of certiorari).

The absence of confiscatory intent does not excuse a judicial taking of property. Hughes v. Washington, 389 U.S. 290, 298 (1967) (Stewart, J., concurring). And the absence of congressional authorization for the kind of judicial taking that retroactive overruling of Graver Tank would entail means that such a judicial action would be even more constitutionally problematic than a confiscation by the political branches, which would typically trigger a right to pursue relief under the Tucker Act, 28 U.S.C. § 1491(a)(1). See Regional Rail Reorganization Act Cases, 419 U.S. 102, 127 n.16 (1974).

We need not show that a retroactive overruling of Graver Tank would serve the interests only of a few private litigants, like petitioner here. Even conceding that the public use requirement might be met, see Hawaii Housing Auth. v. Midkiff, 467 U.S. 229, 239-44 (1984), one of the principal purposes of the Takings Clause is "to bar Government from forcing some people alone to bear public burdens which, in all fairness and justice, should be borne by the public as a whole." Dolan v. City of Tigard, 114 S. Ct. 2309, 2316 (1994) (quoting Armstrong v. United States, 364 U.S. 40, 49

(1960)).

- 3. Even apart from the Takings Clause, commitment to the rule of law and respect for its presupposition of governmental regularity, both of which the Due Process Clause embodies, would forbid a sudden change in judicial course that would upset the settled and legitimate expectations of patent holders. In Heckler v. Community Health Services, 467 U.S. 51 (1984), this Court observed that, "when the Government acts in misleading ways, it may not enforce the law if to do so would harm a private party as a result of governmental deception." Id. at 61 n.12 (citing, inter alia, Kaiser Aetna v. United States, 444 U.S. 164, 178-80 (1980), and Santobello v. New York, 404 U.S. 257 (1971) (due process)); see also Raley v. Ohio, 360 U.S. 423, 438-40 (1959) (due process). The Heckler Court further noted that "this principle also underlies the doctrine that an administrative agency may not apply a new rule retroactively when to do so would unduly intrude upon reasonable reliance interests." 467 U.S. at 61 n.12 (citing NLRB v. Bell Aerospace Co., 416 U.S. 267, 295 (1974)). Precisely the same principle is applicable here.
- 4. The rule now adopted by a majority of this Court under which decisions of federal constitutional law are ordinarily given retroactive effect, see Harper v. Virginia Dept. of Taxation, 113 S. Ct. 2510 (1993), has no application here - and, even if it did, it plainly would necessarily be overridden by the takings and due process constraints outlined above. The doctrine of equivalents is a judicially developed doctrine. Altering it prospectively would present none of the jurisprudential tensions that arise when a prospective-only ruling amounts to a denial that a text - either the Constitution itself, as in Harper, or a federal statute, see Plaut v. Spendthrift Farm, Inc., 115 S. Ct. 1447, 1451 (1995) - has had the same meaning since its enactment. There are no such tensions when this Court is engaged in elaborating judge-made law under a statutory scheme that has always been understood as leaving this Court with authority to develop supplemental rules of law, subject to congressional override. Cf. Miles v. Apex Marine Corp., 498 U.S. 19, 33-36 (1990) (admiralty law); Textile Workers v. Lincoln Mills of Alabama, 353 U.S. 448, 451 (1957) (§ 301(a) of the Taft-

Hartley Act, 29 U.S.C. § 185(a)); Standard Oil v. United States, 221 U.S. 1, 69-70 (1911) (§ 1 of the Sherman Act, 15 U.S.C. § 1). Therefore, if there were an appropriate retroactivity axiom in this case, it would be the rule that positive-law enactments like statutes are presumed to have only prospective effect. E.g., Landgraf v. USI Film Prods., 114 S. Ct. 1483, 1497 (1994) (presumption against retroactivity is rooted in "[e]lementary considerations of fairness" and policy that "settled expectations should not be lightly disrupted").

#### CONCLUSION

The judgment of the Court of Appeals should be affirmed; alternatively, any substantive restriction in the protection of patents by the doctrine of equivalents should be made purely prospective and applicable only to patent applications filed after the date of decision in this case, or at most to patents issued after that date.

Respectfully submitted.

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May 13, 1996

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Supreme Court, U.S. F. 1 1 E.D.

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IN THE

CLERK

# SUPREME COURT OF THE UNITED STATES OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC.,
Petitioner.

HILTON-DAVIS CHEMICAL CO.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

# BRIEF OF AMICUS CURIAE CHEMICAL MANUFACTURERS ASSOCIATION IN SUPPORT OF RESPONDENT

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1798

## TABLE OF CONTENTS

	Page
STATEMI	ENT OF INTEREST
SUMMAR	Y OF THE ARGUMENT 2
ARGUME	NT 5
Ad	e Application of the Doctrine of Equivalents vances, Rather Than Defeats, Uniformity and trainty in the Construction of a Patent
Pre Pro	e Doctrine of Equivalents Should be served Because It Works Efficiently to vide The Inventor With a Reasonable ope of Patent Protection
Pate Tec	thout the Ability to Rely on Equivalents, ent Procurement — Particularly for chnically Complex Chemical Inventions — and Become Burdensomely Complex
is F	Preservation of the Doctrine of Equivalents fully Consistent With the Court's Pronouncents in Markman
CONCLUS	SION 12

## TABLE OF AUTHORITIES

Cases	Page
Charles Greiner & Co., Inc. v. Mari-Med Mfg., Inc.,	
962 F.2d 1031 (Fed. Cir. 1992)	8
Charvat v. Commissioner of Patents,	
503 F.2d 138 (D.C. Cir. 1974)	5
Exxon Chem. Patents, Inc. v. Lubrizol Corp.,	
64 F.3d 1553 (Fed. Cir., 1995)	6
General Electric Co. v. Wabash Appliance Corp.,	
304 U.S. 364, 369 (1938)	. 11
Georgia-Pacific Corp. v. United States Plywood Corp.,	
258 F.2d 124 (2d Cir. 1958), cert. denied, 358 U.S.	
884 (1958)	5
Graver Tank & Mfg. Co. v. Linde Air Products Co.,	
339 U.S. 605 (1950)	7
Markman v. Westview Instruments, Inc.,	
64 U.S.L.W. 4263 (U.S. April 23, 1996)	0-12
Wilson Sporting Goods Co. v. David Geoffrey & Assoc.,	
904 F.2d 677 (Fed. Cir. 1990), cert. denied, 488 U.S.	
992 (1990)	8
Statutes	
35 U.S.C. § 112	5

Other Materials		Page	
D. Chisum, Patents, (1995)	******************	5, 6	

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BRIEF OF AMICUS CURIAE
CHEMICAL MANUFACTURERS ASSOCIATION
IN SUPPORT OF RESPONDENT

## STATEMENT OF INTEREST

The Chemical Manufacturers Association (CMA) is a non-profit trade association. Its members produce the vast majority of the basic industrial chemicals that are consumed in the United States. More than ninety percent of the U.S. chemical production capacity is owned by CMA member companies, who collectively manufacture more than 70,000 different chemical substances.

3

CMA members are prodigious users of the U.S. patent system. Thousands of U.S. patents are issued each year to CMA member companies. These patents are derived from the creative work of nearly 100,000 scientists, engineers and technicians employed in the industry's research and development laboratories.

Petitioner in this appeal has directly challenged the propriety and the legality, of construing patents to cover "insubstantial changes" beyond the patent's literal scope. CMA views the possible abolition of this fundamental principle of patent construction as a strike at the heart of the value of a patent in the chemical industry and the role of the patent as an effective incentive to develop new chemical technology. CMA has obtained the consent of both the Petitioner, Warner-Jenkinson, and the Respondent, Hilton-Davis, to file this amicus brief. Beyond opposing Petitioner's position on patent claim construction, CMA takes no position on the merits of the case.

## SUMMARY OF THE ARGUMENT

After more than a century of interpreting patents as encompassing "equivalents" — insubstantial changes beyond a patent's literal scope — this Court has been asked by the Petitioner to limit the construction of a patent to a strict literal interpretation of the patent claims. The asserted attraction of such a strict literalism is its supposed precision, i.e., the public will supposedly have the benefit of enhanced certainty as to the effect of a patent.

Instead of enhancing certainty, limiting patents to a literal construction could produce a less certain, less uniform and more capricious patent construction. The doctrine of equivalents provides a principle of patent construction under

which the underlying substance of the patented invention must be fully and carefully assessed. Under a literal-only standard for patent construction, this principle would be gone. No doctrine or principle would then guarantee uniform treatment of substantively identical behaviors among accused infringers.

Two accused infringers, practicing identical technology save for a mere colorable difference, would — without a doctrine of equivalents — receive divergent treatment whenever one accused infringer falls within a patent's literal scope and the other is nestled just beyond the literal periphery. Today, under the doctrine of equivalents, the practice of a mere colorable change or an insubstantial difference over the literal patent construction does not provide a safe harbor against a charge of infringement — substantively identical behavior can be afforded uniform treatment.

Similarly, literal-only construction does not translate into greater certainty in construing a patent. The technical words and phrases used in a patent claim — especially in technology-intensive and arcane fields such as organic chemistry, materials science, biochemistry, and a host of medicinal chemical fields — are seldom understood in a facile and perfectly unambiguous manner. The result is that a court is often faced with multiple possible interpretations for a word used in the patent.

The uncertainties arising from possibly varying literal constructions are immediately diminished where the ultimate patent construction continues with a mandated focus on the substance of what is claimed. A court making an unusually technical interpretation of a word or a phrase in a claim, once refocused on the substantiality of the differences between the literally construed patent claims and the accused infringer's

conduct, can reach a conclusion equivalent to a less technical interpretation of the same word.

The doctrine of equivalents, because of this enhanced uniformity and certainty, assures inventors will have an enhanced possibility for adequate and effective protection for their inventions. The doctrine has an important remedial function in a variety of contexts. Where an ill-chosen word might otherwise be construed to produce a gap in literal protection, the doctrine of equivalents can operate to fill the technical void.

Finally, this Court has recently restated the policy objectives to be met in the process of construing a patent. The need to avoid the creation of a "zone of uncertainty" about a patent provides a cogent and compelling reason for maintaining, not excising, this doctrine from the construction of the patent. It is only with the doctrine of equivalents in force, not with its demise, that the adequate and effective protection of the invention can ever be married to certainty and predictability in claim interpretation.

### ARGUMENT

I.

The Application of the Doctrine of Equivalents Advances, Rather Than Defeats, Uniformity and Certainty in the Construction of a Patent.

The construction of a patent focuses on the claims of the patent. In the chemical arts, such claims can vary from a few words to a complex brew of words, structural formulas, analytical parameters, and other characterizing data. Not uncommonly in chemical technologies, patent claims will employ dozens and dozens of words in order to meet the statutorily required "definiteness" in characterizing the invention.

D. Chisum, Patents (1995), Glossary, describes the function of the patent claim:

An applicant for a patent must include in his application one or more claims which set forth the parameters of the invention. These claims measure the invention for determining patentability both during examination and after issuance when validity is challenged. They also determine what constitutes infringement. A claim recites a number of elements or limitations, and will cover or "read on" only those products (or processes) that contain all such elements or limitations.

<sup>&</sup>lt;sup>2</sup> Section 112 of Title 35 sets forth the requirement that the claims of the patent describe the subject matter being claimed with definiteness. This requirement has been recognized as a relative, not an absolute requirement. Charvat v. Commissioner of Patents, 503 F.2d 138 (D.C. Cir. 1974), and Georgia-Pacific Corp. v. United States Phywood Corp., 258 F.2d 124 (2d Cir. 1958), cert. denied, 358 U.S. 884 (1958).

D. Chisum, Patents (1995), §8.03 characterizes the statutory requirement in the following terms:

The many words in a patent claim — even when woven together in phrases and clauses that provide a definite identification of the subject matter of the patent — can be the subject of a spirited range of differing possible interpretations. Many patent litigations, including notable litigations involving sophisticated chemical compositions, have centered on the uncertainty over what literal scope for the claims will ultimately emerge from the litigation. The result has been prolonged uncertainty as to the literal meaning — up to and through the process of appellate review.<sup>3</sup>

The application of the doctrine of equivalents can work to diminish the "zone of uncertainty" inherent in any literal construction of a patent. By forcing the court to further consider the issue of "insubstantial differences," the court is inherently forced to assess the underlying substance of the invention. Often this has included consideration of whether the activity accused of infringement operates using substantially the same function in substantially the same way to produce substantially the same result. Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605 (1950). This process of considering equivalents means that uncertainty based on multiple possible literal distinctions will diminish.

The same considerations operate to assure uniformity of result when the doctrine is invoked. Without a doctrine of equivalents, two accused infringers may be individually practicing substantively identical technology — save for a mere insubstantial or colorable difference between the two — but find themselves treated differently under a literal-only standard for patent construction. If only a literal construction is considered, one of the accused infringers may be found liable for literal infringement — being just inside the "metes and bounds" of the literal claims — while the second may just barely escape the patent's literal reach.

Holding the second of two substantially identically situated accused infringers wholly free from the patent's reach produces a manifest non-uniformity. With two accused infringers both practicing substantially the same subject matter, no sensible patent or public policy rationale supports such divergent results. The doctrine of equivalents can eliminate this non-uniformity — again by virtue of its unique requirement that a substantive evaluation of the accused infringing activity be undertaken.

Thus, without the doctrine of equivalents, patent construction can fall victim to a pernicious literalism. Since mere colorable differences — colorable changes in function, way, and result totally devoid of substance — will determine whether the accused infringer will or will not infringe, the

<sup>(...</sup> continued) The standard of definiteness is one of reasonableness under the circumstances. It is whether, in the light of the teachings of the prior art and of the particular invention, the claims set out and circumscribe a particular area with a reasonable degree of precision and particularity. [Emphasis supplied.]

Exxon Chem. Patents, Inc. v. Lubrizol Corp., 64 F.3d 1553 (Fed. Cir., 1995), provides a recent example of the complexity — and inherent uncertainties — involved in the literal construction of a patent claim. At trial, both parties to the litigation advanced an interpretation of a claim alleged to infringe a patent. The trial court entered judgment against the defendant based on a finding of patent infringement tied to one of the two literal constructs. On appeal, the Federal Circuit construed the same claim in a different literal manner — a construction not argued by either party below. Based on this new literal construction, the Federal Circuit found no infringement and reversed the judgment in favor of the plaintiff-patentee.

literal boundary of the claim becomes inordinately rigid. Where one arcane technical word used in the patent claim is given a slightly less generous literal construction by a court, a claim of infringement is entirely defeated. Because the doctrine of equivalents can self-correct the subtle and insubstantial variations that are possible in literal claim construction, it diminishes the non-uniformities and uncertainties inherent in construing a patent.

#### П.

The Doctrine of Equivalents Should be Preserved Because It Works Efficiently to Provide The Inventor With a Reasonable Scope of Patent Protection.

The doctrine of equivalents injects both reality and practicality into the process of construing a patent. It is a direct and effective means of assuring that a deserving inventor can be accorded a reasonable scope of protection. Simultaneously, it assures that the public can reasonably rely on the patent claims as the indicator of the scope of that protection.

The well-developed decisional law applying this doctrine dictates this result. For example, the courts have long limited the doctrine to prevent recapturing any subject matter that was known or obvious within the prior art. Wilson Sporting Goods Co. v. David Geoffrey & Assoc., 904 F.2d 677 (Fed. Cir. 1990), cert. denied, 488 U.S. 992 (1990). Similar proscriptions eliminate from the reach of the doctrine subject matter voluntarily surrendered to the public during the course of patent procurement. Charles Greiner & Co., Inc. v. Mari-Med Mfg., Inc., 962 F.2d 1031 (Fed. Cir. 1992). Most importantly, the courts can apply the doctrine — particularly in the chemical field — to carefully filter away any substantial (and, therefore, non-infringing) change from truly insubstantial differences.

The doctrine can be made to work effectively, much like other rules of interpretation applied to other types of documents. Statutes are not read with a surgical literalism that ignores the statute's ultimate effects. Contracts are not deliberately construed with a technical literalism that defeats the discernable intent of the parties. Patent claims have not, and should not, be similarly imprisoned by words without a full inquiry into their contextual meaning.

#### III.

Without the Ability to Rely on Equivalents, Patent Procurement — Particularly for Technically Complex Chemical Inventions — Would Become Burdensomely Complex.

For every judicial action, there can be anticipated an equal and opposing practitioner reaction. If this Court takes the extraordinary step of mandating patent construction without regard to equivalents, the focus of the inventor's patent procurement effort will lurch toward the use of additional words to describe the invention. Without some interpretative means to assure the construction of a patent would focus on its substance, the inventor would be forced into needless and wanton prolixity in claiming the invention. Synonymous words, duplicative words, cumulative words, and alternative words would suddenly become the prime currency of the patent document.

The object of patent procurement would center on the presentation of every conceivable verbal formulation of the "metes and bounds" of the underlying invention. The mission of the patent solicitor would be to inject into the patenting process every conceivable verbal formulation that might capture some otherwise literally uncaptured formulation of the substance of the invention.

No conceivable policy justification can exist for forcing inventors to draft such a plethora of claims solely in an attempt to capture colorable changes. The protection afforded to inventors should not depend on the verbal virtuosity of their patent solicitors to a greater extent than on the underlying technical merits of their respective contributions to the useful arts.

#### IV.

# The Preservation of the Doctrine of Equivalents is Fully Consistent With the Court's Pronouncements in Markman.

The result being urged herein is wholly consistent with this Court's recently expressed views on patent construction expressed in *Markman v. Westview Instruments, Inc.*, 64 U.S.L.W. 4263 (U.S. April 23, 1996). The holding in *Markman* affirmed that the "construction of a patent is exclusively within the province of the court." Even though the court below indicated that the factual question of equivalents was a matter for the jury, the application of the doctrine clearly results in the "construction of a patent." However, the doctrine need not be abolished or restrained simply because *Markman* might be read to mandate that the application of the doctrine as a matter for the court, not the jury.

The Markman court expressly recognized that complex doctrines of claim interpretation exist — "the claims of patents have become highly technical in many respects as a result of special doctrines relating to the proper form and scope of claims that have been developed by the courts and the Patent Office" (emphasis supplied). Presumably, the doctrine of equivalents is one of these "special doctrines."

Moreover, the force of the argument that the court, not the jury, should interpret patent claims was ascribed in Markman

to a desire for "uniformity in the treatment of a given patent." The Markman court viewed such uniformity "as an independent reason to allocate all issues of construction to the court." It further quoted General Electric Co. v. Wabash Appliance Corp., 304 U.S. 364, 369 (1938), to the effect that "[t]he limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public," noting that otherwise a "zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field."

Setting the task of construing "insubstantial differences" under the doctrine of equivalents as a matter of law for the court merely recognizes this doctrine of claim interpretation. Moreover, if determining the "insubstantial differences" were undertaken by the court, this assignment would most certainly assure that same uniformity in the application of this doctrine that the *Markman* court describes as an essential policy objective for all doctrinal issues of patent construction. Finally, it would work to avoid the "zone of uncertainty" that might be supposed if the doctrine of equivalents were for some reason, uniquely among doctrines of patent construction, to be assigned to the jury.

Accordingly, this Court faces no impediment in reaching a decision under a *Markman*-driven rationale that the matter of "insubstantial differences," like other doctrinal issues in the province of patent construction, must be assigned to the court. To the contrary, such an affirmance would serve to strengthen the doctrine by further promoting the precision and uniformity of its application — in harmony and in unison with the other patent construction issues left for the court.

For the patent system to operate as a stimulus to innovation in the chemical industry, the objective of promoting precision and uniformity must be paramount. It sharpens the incentive to innovate, while it reduces the potential for needless and wasteful conflicts among innovators. With the escalating costs of patent litigation being a matter of no small concern to the chemical industry, a decision by this Court affirming the vitality of a doctrine of equivalents focused on "insubstantial changes" would have a salutary effect.

#### CONCLUSION

Petitioner seeks to use the definiteness requirement for patent claims as support for the proposition that the doctrine of equivalents must be eradicated from patent jurisprudence. It is, however, the presence of the doctrine of equivalents, not its abolition, that promotes the certainty and uniformity in infringement determinations which Petitioner argues the statute and its policy underpinnings demand. The doctrine, properly circumscribed, should be applied with other special doctrines of claim construction to construe a patent.

The Court has recently spoken in *Markman* that the various doctrines of patent construction, being matters for the court rather than the jury, will work to achieve a greater uniformity and to eliminate any "zone of uncertainty" surrounding patent construction. The doctrine of equivalents applied by the court

is fully consistent with this policy. Moreover, it could work to achieve the full vindication of the policy.

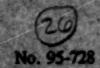
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May 13, 1996



Supreme Court, U.S. F I L E D

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# OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

INTELLECTUAL PROPERTY LAW ASSOCIATION
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## TABLE OF CONTENTS

	Pe	age
TAI	BLE OF AUTHORITIES	. ii
INT	TEREST OF THE AMICUS CURIAE	. 1
SUN	MMARY OF ARGUMENT	. 2
AR	GUMENT	. 4
I.	Some Form of the Doctrine of Equivalents, Which Is a Long-Standing and Essential Part of this Country's Plan for Encouraging Innovation, Should Be Continued	. 4
II.	In Doctrine-of-Equivalents Cases, the Jury Should Continue Its Role of Comparing the Patent Claims, as Interpreted by the Court, with the Accused Product	. 7
Ш.	In View of Prudential Considerations, this Court Should Defer to the Federal Circuit on Detailed Aspects of the Doctrine of Equivalents, Which Involves a Sensitive Balancing of Competing Policies in a Broad Range of Contexts	10
CO	NCI LISION	12

## TABLE OF AUTHORITIES

	Page(s)
Cases	
Cardinal Chemical Co. v. Morton Int'l, Inc.,	
113 S. Ct. 1967 (1993)	13
Dennison Manufacturing Co. v. Panduit Corp.,	
475 U.S. 809 (1986)	74) 9
Genentech Inc. v. Sumitomo Pharmaceuticals Co.	(14) 6
	6
(Osaka, Japan, High Court Mar. 29, 1996) Graver Tank & Mfg. Co. v. Linde Air Products Co.,	0
339 U.S. 605 (1950)	5 7 8 10
Hickman v. Taylor, 329 U.S. 495 (1947)	. 5, 7, 6, 10
Hilton Davis Chemical Co. v. Warner-Jenkinson Co.,	
62 F.3d 1512 (Fed. Cir. 1995) (en banc), cert.	
granted, 64 U.S.L.W. 3574 (Feb. 23, 1996)	5.8
Hoganas AB v. Dresser Indus., Inc.,	
9 F.3d 948 (Fed. Cir. 1993)	8
Insta-Foam Products, Inc. v. Universal Foam Systems	
906 F.2d 698 (Fed. Cir. 1990)	9
Markman v. Westview Instruments, Inc.,	
64 U.S.L.W. 4263 (Apr. 23, 1996)	7, 9
Mendenhall v. Cedarapids, Inc., 5 F.3d 1557	
(Fed. Cir. 1993), cert. denied, 114 S. Ct 1540 (1994)	4) 10
Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870	
(Fed. Cir. 1993)	8
Southwall Technologies, Inc. v. Cardinal IG Co.,	
54 F.3d 1570 (Fed. Cir. 1995)	9
SRI International v. Matsushita Electric Corp.,	
775 F.2d 1107 (Fed. Cir. 1985)	10
Tigrett Indus., Inc. v. Standard Indus., Inc.,	
162 U.S.P.Q. 32 (W.D. Tenn. 1967), aff'd, 411 F.	2d 1218
(6th Cir. 1969), aff'd by an equally divided Court,	
397 U.S. 586 (1970)	8
United States v. Fausto, 484 U.S. 439 (1988)	13

	P	a	ge	(s)
Cases				
Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555				
(Fed. Cir. 1991)	*			5
Wilson Sporting Goods Co. v. David Geoffrey & Assoc., 904 F.2d 677 (Fed. Cir.), cert. denied,				
498 U.S. 992 (1990)				
Winans v. Denmead, 56 U.S. (15 How.) 330 (1854)	*	٠		, 5
Statutes and Rules				
35 U.S.C. § 101 (1988)		*	*	. 3
35 U.S.C. § 112, first paragraph (1988)	*	*		. 5
Federal Courts Improvement Act of 1982, Pub. L.				
No. 97-164, 96 Stat. 25	*	*	*	13
Legislative Materials				
H.R. Rep. No. 312, 97th Cong., 1st Sess. (1981)	*			13
Treatises and Articles				
DONALD S. CHISUM, PATENTS (1995)		*		. 5
BROOKE HINDLE & STEVEN LUBAR, ENGINES OF CHANGE THE AMERICAN INDUSTRIAL REVOLUTION (1986)				. 4
INTERNATIONAL PATENT LITIGATION: A COUNTRY-BY- COUNTRY ANALYSIS (Michael Meller ed., 1996 & Supp.				
Karl B. Lutz, Evolution of the Claims of U.S. Patents	, )	9	0	. 0
(pts. 1-3), 20 J. PAT. OFF. Soc'Y 134, 377,				_
457 (1938)			*	. 5
ROBERT STERN, EUGENE GRESSMAN, STEPHEN				
SHAPIRO & KENNETH GELLER, SUPREME COURT				
PRACTICE (7th ed. 1993)	*		*	13

# Supreme Court of the United States OCTOBER TERM, 1995

WARNER-JENKINSON COMPANY, INC., Petitioner,

V.

HILTON DAVIS CHEMICAL Co.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

## BRIEF OF THE DALLAS-FORT WORTH INTELLECTUAL PROPERTY LAW ASSOCIATION AS AMICUS CURIAE URGING AFFIRMANCE

## INTEREST OF THE AMICUS CURIAE

Formed in the mid-1950s, the Dallas-Fort Worth Intellectual Property Law Association is a regional association of persons concerned with the patent, trademark, copyright, trade secret, and other laws protecting intellectual property rights. The Association, which was formerly known as the Dallas-Fort Worth Patent Association, is a member of the National Council of Intellectual Property Law Associations.

The Association's over 100 members, mostly attorneys, regularly represent clients in patent litigation, advise clients on business and licensing matters involving patent issues, and

The parties' letters of consent have been filed with the Clerk pursuant to Rule 37.3.

represent clients in administrative proceedings before the United States Patent and Trademark Office. The members' clients are split roughly evenly between patent owners and accused infringers. In their role as advisors, the Association's members are regularly called upon to analyze and make judgments as to whether particular manufacturing and sales activities infringe patents, including under the doctrine of equivalents. The Association's attorney members also represent individuals, universities, and small and large businesses in the trial and appellate stages of patent-infringement litigation.

Neither the Association nor any of its members has any direct interest in any of the parties or in which side prevails in this lawsuit, except to the extent that the outcome affects the administration of the patent laws. A principal object of the Association is to aid in the institution of improvements in the patent laws and court procedures for administering those laws. To promote that objective, this amicus curiae brief sets forth the Association's observations, reflecting its members' experience in advisory and litigation matters, on the role a properly tailored doctrine of equivalents plays in ensuring just and effective protection of inventors' labors while at the same time promoting predictability in the outcome of patent disputes.

#### SUMMARY OF ARGUMENT

Our patent system is a vital driver of American ingenuity and the doctrine of equivalents is a vital part of that system. For the reasons well-stated by other amici, including the United States, the American Intellectual Property Law Association, and the Intellectual Property Owners, the doctrine of equivalents neither was impliedly repealed by the 1952 codification of the patent laws nor is it inconsistent with the provisions for patent reissuance. Properly tailored, the doctrine of equivalents strongly promotes the purposes underlying the Patent Code. The Association accordingly

urges the Court to reaffirm the continuing existence of the doctrine of equivalents in patent infringement cases.

Like jury cases charging literal infringement, doctrine-of-equivalents cases involve roles for both judge and jury. Once the judge has determined the legally proper interpretation of the patent claim, it should be the jury's province to determine whether the accused product differs only insubstantially from that interpretation. Because this comparison depends on the particular characteristics of the patent claim and the accused product, it cannot be reduced to broad, rigid rules. It is inherently a factual application of patent claims, not a legal interpretation extending them; indeed, such an extension would invade Congress's authority, properly delegated to the Patent and Trademark Office, to determine what patents shall issue.

As articulated by the Federal Circuit's decisions, the doctrine of equivalents is not a license for the jury to engage in an unguided inquisition. Instead, there are a variety of legal constraints that restrict jury consideration of the doctrine in many cases. Alarmist predictions that American industry will be devastated are contrary to the long history of jury involvement in doctrine-of-equivalents cases. The Court should endorse the jury's continuing role in factually applying the doctrine of equivalents.

After deciding these two fundamental aspects of the doctrine of equivalents—its continued existence and the role of the jury—for prudential reasons the Court should refrain from dictating the exact contours of the doctrine. Predictability requires a substantial body of doctrine-of-equivalents caselaw continually adjusted to the myriad contexts in which inventions are made

Inventions involving products, processes, and compositions of matter may be patented. 35 U.S.C. § 101. Although the same considerations apply for these different classes of invention, for simplicity this brief refers to accused and patented products only.

and patents are awarded. This Court's broad mandate to promote uniform application of all federal laws prevents it from devoting the resources these adjustments require. The Federal Circuit, however, with its nationwide patent-law jurisdiction, decides dozens of cases each year involving the doctrine of equivalents and has both the opportunity and expertise to maintain a uniform, detailed, and up-to-date caselaw. In its disposition of this case, the Court should leave to the Federal Circuit the flexibility to establish and adjust the detailed contours of the doctrine.

#### **ARGUMENT**

 Some Form of the Doctrine of Equivalents, Which Is a Long-Standing and Essential Part of this Country's Plan for Encouraging Innovation, Should Be Continued.

Since before American ingenuity burst into the world's consciousness at the London Crystal Palace Exhibition in 1851,<sup>2</sup> our patent system has been a powerful engine promoting technological advancement. As summed up by Abraham Lincoln: "The Patent System added the fuel of interest to the fire of genius."

Two features in particular have contributed to the success of our patent system. The metes-and-bounds, or "peripheral," claiming system, an American innovation to patent law begun in 1822,<sup>3</sup> provides definite scope to patents so that inventors and the public alike can know with reasonable certainty what has been patented. Under this system, literal infringement is determined by answering the question whether an accused device is identically described by one or more of the patent's claims.

Because this inquiry, without more, "would place the inventor at the mercy of verbalism," this Court long ago endorsed a doctrine of equivalents to prevent evasion of patents by insubstantial changes. The doctrine has withstood the test

This exhibition transformed America's reputation almost overnight from that of a backward, rural country to one of technical excellence and ingenuity. For an account of this transformation, see BROOKE HINDLE & STEVEN LUBAR, ENGINES OF CHANGE: THE AMERICAN INDUSTRIAL REVOLUTION 249-68 (1986), and the exhibition of the same name on permanent display at the National Museum of American History.

Earlier patents contained only a "specification," which described and showed the invention in technical terms and enabled its practice by those skilled in the art. Under this "central" claiming system, the scope of a patent was determined by comparing the invention as described and shown with the accused infringement. Our present patent laws, in contrast, require an applicant to submit claims, which are carefully scrutinized and sometimes revised by the Patent and Trademark Office, thereby legally defining the patent's coverage. 35 U.S.C. § 112, first paragraph (1988). For accounts of the historical development of patent claims, see generally 2 DONALD S. CHISUM, PATENTS § 8.02, at 8-5 to -13 (1995); Karl B. Lutz, Evolution of the Claims of U.S. Patents (pts. 1-3), 20 J. PAT. OFF. SOC'Y 134, 377, 457 (1938); Hilton Davis Chemical Co. v. Warner-Jenkinson Co., 62 F.3d 1512, 1530-31 (Fed. Cir. 1995) (Newman, J., concurring), cert. granted, 64 U.S.L.W. 3574 (Feb. 23, 1996); and Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1560-61 (Fed. Cir. 1991).

Graver Tank & Mfg. Co. v. Linde Air Products Co., 339 U.S. 605, 607 (1950).

<sup>&</sup>lt;sup>5</sup> Winans v. Denmead, 56 U.S. (15 How.) 330, 342-43 (1854).

of time, gaining increasing international acceptance<sup>6</sup> as a vital adjunct to literal infringement.

Amicus agrees with the many other bar and industry groups that support continuation of the doctrine of equivalents in some form. The doctrine adds equity to the quest for balance between the interests of patentee and accused infringer. It softens the harsh edge between literal infringement and no infringement. Fairness cannot be reached in infringement cases without some form of this doctrine. As the United States succinctly states in its amicus brief: "A clearly defined doctrine of equivalents serves the goals of the Patent Act."

To preserve a just and effective patent system as we have today, one which fairly balances the interests of the patentee and the public at large, the Court should reaffirm the continued existence of some form of the doctrine of equivalents. II. In Doctrine-of-Equivalents Cases, the Jury Should Continue Its Role of Comparing the Patent Claims, as Interpreted by the Court, with the Accused Product.

Determining if a patent has been infringed, whether by literal infringement or by the doctrine of equivalents, is a two-step process involving both legal conclusions and factual findings. As the Court held in *Markman v. Westview Instruments, Inc.*, 64 U.S.L.W. 4263, 4267 (Apr. 23, 1996), the first step is the trial court's legal interpretation of the patent claims as issued. The second step is comparison of the properly interpreted claims with the accused product: does the product have the claimed characteristics, either exactly (for purposes of literal infringement) or with only insubstantial differences (for purposes of the doctrine of equivalents)?

In Graver Tank & Mfg. Co. v. Linde Air Products Co., the Court recognized that the assessment of whether an accused product differs only insubstantially from a patent claim is a determination of fact. Because this comparison depends on the particular attributes of the accused product and the scope of the patent claim, viewed in the context of the prior art, it "is not the prisoner of a formula and is not an absolute to be considered in a vacuum." 339 U.S. 605, 609-10 (1950).

Because assessment of whether differences are substantial rests on many case-specific factors and "requires a balancing of credibility, persuasiveness and weight of evidence," id., it should be viewed as a factual application of properly interpreted patent claims, not a further legal interpretation of them. Even in literal infringement cases, care must be taken

As other countries moved from central claiming to peripheral claiming systems, many adopted doctrines similar to the American doctrine of equivalents, although often in diluted form. See generally INTERNATIONAL PATENT LITIGATION: A COUNTRY-BY-COUNTRY ANALYSIS (Michael Meller ed., 1996 & Supp.). Indeed, even the courts of Japan, which traditionally accorded patents only narrow scope according to the literal language of their claims, have recently adopted a doctrine of equivalents. Genentech Inc. v. Sumitomo Pharmaceuticals Co. (Osaka, Japan, High Court Mar. 29, 1996).

See Brief of Amicus Curiae American Intellectual Property Law Association in Support of Neither Party at 3 ("the doctrine must remain available to patentees"); Brief Amicus Curiae of Intellectual Property Owners in Support of Petitioner at 3-4; Brief on Behalf of the American Automobile Manufacturers Association as an Amicus Curiae in Support of the Petitioner at 5; Brief for Information Technology Industry Council and Intel Corporation as Amici Curiae in Support of Petitioner at 3-4.

Brief for the United States as Amicus Curiae at 14 (section heading).

In some cases, issues of claim interpretation will be relevant to the doctrine of equivalents, and under Markman that interpretation will be a matter to be decided by the judge. For example, where the substantiality of differences is determined by assessing whether the accused product exhibits substantially the same function, way, and

to segregate interpretation of a claim (by a judge) from application of that interpretation (by the jury). Like any language, English has an inherent limit beyond which definitions cannot meaningfully elaborate. Appropriate demarcation of this boundary between interpretation and application should be guided by the degree to which the question involves generally applicable issues of claim scope rather than the specific circumstances of a particular accused product.

The accused-product-specific nature of the determination of whether differences are substantial is illustrated by past doctrine-of-equivalents cases. Thus, the issue in *Graver Tank* was whether an accused welding flux that substituted manganese for the claimed magnesium infringed the patent. 339 U.S. at 610. Other cases have involved substitution of a single hole for a pair of openings in a playpen fastening system, <sup>10</sup> of a pin for a fixation nail in hip surgery, <sup>11</sup> of three cabinets for one in a tissue specimen processing apparatus, <sup>12</sup> and of solid fibers for straw-shaped channels in a furnace lining. <sup>13</sup> In each of these cases, the determination of whether or not the differences were substantial required a

result as the patent claim, Hilton Davis, 62 F.3d at 1518, definition of the claim's function, way, and result should be a matter of interpretation for the judge. Comparison of the accused product's function, way, and result with that definition, however, remains for the jury.

detailed analysis of the accused products, not simply an abstract assessment of the scope of the patent claim.

The assessment of whether an accused product is equivalent to a claimed invention is thus properly viewed as a factual application of the claim, not an expansion of its scope. <sup>14</sup> A finding of equivalents does not change the scope of a patent claim, but merely applies that claim to a specific accused product. It involves skills possessed by juries, such as assessing credibility, rather than analyses for which judges are especially qualified, such as interpretation of legal documents. See Markman, 64 U.S.L.W. at 4268. By its nature, moreover, the task of comparing a specific accused product with the claim does not implicate the need for uniformity inherent in construction of the scope of patent claims. See id. at 4269.

Contrary to the warnings of some *amici* supporting petitioner, the jury's task is not unguided and unbounded. Instead, it is subject to significant judicial controls. First, the doctrine of "prosecution history estoppel" prevents findings of equivalence that are inconsistent with positions taken by the patentee during the process of obtaining the patent. *Insta-Foam Products, Inc. v. Universal Foam Systems, Inc.*, 906 F.2d 698, 703 (Fed. Cir. 1990). It is properly for the judge to determine what preclusive effect to accord such positions. *Southwall Technologies v. Cardinal IG Co.*, 54 F.3d 1570, 1579 (Fed. Cir. 1995). Second, it is well-established that a

<sup>&</sup>lt;sup>10</sup> Tigrett Indus., Inc. v. Standard Indus., Inc., 162 U.S.P.Q. 32, 36 (W.D. Tenn. 1967) (equivalent), affd, 411 F.2d 1218 (6th Cir. 1969), affd by an equally divided Court, 397 U.S. 586 (1970).

Deyerle v. Wright Mfg. Co., 496 F.2d 45, 51-52 (6th Cir. 1974) (not equivalent).

Miles Lab., Inc. v. Shandon Inc., 997 F.2d 870, 876-77 (Fed. Cir. 1993) (equivalent).

Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 954-55 (Fed. Cir. 1993) (not equivalent).

As noted in Wilson Sporting Goods Co. v. David Geoffrey & Assoc., 904 F.2d 677, 684 (Fed. Cir.), cen. denied, 498 U.S. 992 (1990):

To say that the doctrine of equivalents extends or enlarges the claims is a contradiction in terms. The claims ... remain the same and application of the doctrine expands the right to exclude to "equivalents" of what is claimed.

party practicing the prior art is not liable for infringement under the doctrine of equivalents. Wilson Sporting Goods Co. v. David Geoffrey & Associates, 904 F.2d 677, 684 (Fed. Cir.), cert. denied, 498 U.S. 992 (1990). Where the accused product simply practices the prior art, the doctrine of equivalents should not be submitted to the jury. Finally, the trial court remains responsible for determining that the evidence is sufficient to support a finding that the accused product is only insubstantially different from the patent claim before submitting a case to the jury under the doctrine of equivalents. Mendenhall v. Cedarapids, 5 F.3d 1557 (Fed. Cir. 1993), cert. denied, 114 S. Ct. 1540 (1994). 15

For these reasons, the allocation of roles between judge and jury established by the decision below should be affirmed.

III. In View of Prudential Considerations, this Court Should Defer to the Federal Circuit on Detailed Aspects of the Doctrine of Equivalents, Which Involves a Sensitive Balancing of Competing Policies in a Broad Range of Contexts.

Although the continued existence of the doctrine of equivalents and the role of the jury are questions of substantial importance appropriate for decision by this Court, for prudential reasons the Court should decline to spell out the exact contours of the doctrine of equivalents.

Like many sound policies, the doctrine of equivalents represents an attempt simultaneously to address competing considerations. It seeks to strike a sensitive balance that both promotes claim definiteness and protects patent rights from mere technical evasions. Inventors should be secure in rewards for their labors, but the application of the doctrine should be predictable so that others can conduct themselves accordingly.

Proper application of the doctrine of equivalents requires that it be continually tailored to the multitude of circumstances presented by newly arising patent claim formats, prosecution histories, contexts of invention, and attributes of accused products. Because the consequences of new circumstances are difficult to assess in advance, this tailoring is best accomplished by deciding new issues as they are presented in concrete terms by actual cases.

The effective operation of the doctrine of equivalents requires a steady stream of appellate caselaw addressing these emerging issues, so that the trial courts decide cases consistently. Inasmuch as the overwhelming majority of real-world doctrine-of-equivalents issues are, and should be, resolved by lawyers' advice without resort to litigation, <sup>16</sup> a well-developed caselaw serves an even more significant purpose by allowing patent practitioners to give the public sound advice on infringement issues.

This Court's broad jurisdiction and limited resources prevent it from deciding more than an occasional case involving the doctrine of equivalents. The Federal Circuit, however, with its nationwide patent-law jurisdiction, decides over a hundred

As recognized in Graver Tank, 339 U.S. at 608-09, the doctrine of equivalents also operates in reverse, to shield an accused product literally meeting a claim's requirements from infringement where it is "so far changed in principle" that it performs "in a substantially different way." See, e.g., SRI International v. Matsushita Electric Corp., 775 F.2d 1107, 1122-25 (Fed. Cir. 1985). The comparison required under this reverse doctrine of equivalents is also an issue of fact that should be the province of the jury.

<sup>16</sup> Cf. Hickman v. Taylor, 329 U.S. 495, 514-15 (1947) (Jackson, J., concurring) (observing that their advisory roles make "the lawyer and law office . . . indispensable parts of our administration of justice").

patent cases, including dozens involving the doctrine of equivalents, each year. Unlike this Court, it has the resources to develop and maintain a uniform, detailed, and evolving caselaw regarding the doctrine. Based on their experience in giving advice regarding the doctrine of equivalents, the Association's members believe it is important that the Federal Circuit have the flexibility to maintain that body of law.

In deciding this case, therefore, this Court should paint with a broad brush, leaving to the Federal Circuit the flexibility to establish and adjust the detailed contours of the doctrine of equivalents in future cases. The Court should decline the invitation of various amici to articulate a detailed analyses that will rigidly govern all aspects of the doctrine of equivalents until this Court again accepts a case involving the doctrine. 17

Congress made the Federal Circuit the only Court of Appeals with its jurisdiction defined exclusively by subject matter rather than geography. As a result, the Federal Circuit has a special expertise in, and a special responsibility for, patent law. Like this Court and unlike the other Courts of Appeals, the Federal Circuit has a nationwide jurisdiction that ensures uniformity of decision. These characteristics make deference to the Federal Circuit on detailed issues of patent law particularly appropriate.<sup>18</sup> By deciding only the fundamental

issues presented by this case, and allowing the Federal Circuit to develop and maintain a consistent and uniform body of detailed law governing the doctrine of equivalents, this Court will promote the "nationwide uniformity in patent law" that Congress sought by creating the Federal Circuit.<sup>19</sup>

## CONCLUSION

The decision of the Federal Circuit should be affirmed.

Respectfully submitted,

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For example, the Brief of the United States as Amicus Curiae sets forth a detailed analysis that appears substantively indistinguishable from the doctrine as currently applied by the Federal Circuit, and then, for reasons inexplicable, concludes by proposing remand for proceedings consistent with the analysis. Instead of that disposition, the Association respectfully suggests it would be more appropriate for the Court to affirm the decision below, noting that the Federal Circuit may adjust the details of the doctrine of equivalents as appropriate in future cases.

See Dennison Manufacturing Co. v. Panduit Corp., 475 U.S. 809, 811 (1986) (remanding to obtain "the Federal Circuit's informed opinion on the complex issue of the degree to which the

obviousness determination is one of fact"); see also United States v. Fausto, 484 U.S. 439, 464 n.11 (1988) (Stevens, J., dissenting) ("Because its jurisdiction is confined to a defined range of subjects, the Federal Circuit brings to the cases before it an unusual expertise that should not lightly be disregarded."); cf. Cardinal Chemical Co. v. Morton Int'l, Inc., 113 S. Ct. 1967, 1979-80 (1993) (Scalia, J., concurring in part) (noting experience of Federal Circuit judges in their specialized patent jurisdiction). See also ROBERT STERN, EUGENE GRESSMAN, STEPHEN SHAPIRO & KENNETH GELLER, SUPREME COURT PRACTICE 201 (7th ed. 1993) ("The Supreme Court can, however, be expected to give substantial deference to the views of the Federal Circuit in determining how [patent law] matters should be decided . . . .").

<sup>&</sup>lt;sup>19</sup> H.R. Rep. No. 312, 97th Cong., 1st Sess. 20 (1981); see Federal Courts Improvement Act 1982, Pub. L. No. 97-164, 96 Stat. 25.